KYOCERA

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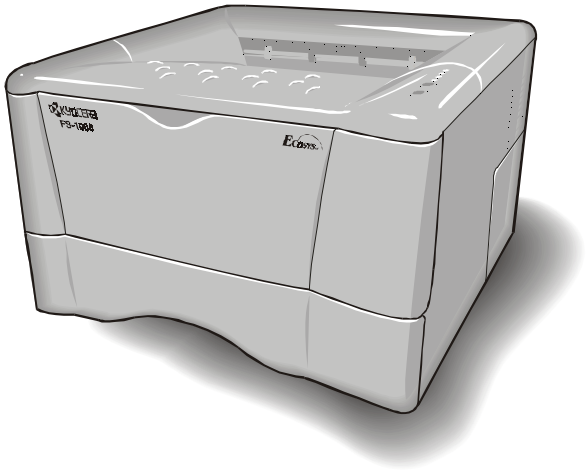

FS-1000

User's Manual

ECOSYS™

Page Printer

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SOFTWARE USED WITH THIS PRINTER MUST SUPPORT THE PRINTER'S EMULATION MODE. The printer is factory-set to emulate the PCL. The emulation mode can be changed by following the procedures described in ***Chapter 1***.

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Introduction

The Kyocera page printer has many extremely desirable features. It was designed to make a contribution to a cleaner environment as well as to represent the latest generation of page printer technology.

This section explains the following topics:

- **Features**
- **Options**
- **Guide to the Manuals**
- **Guide to the User's Manual**

Features

Long Life Modules

The main modules in this laser printer such as the drum, developer unit, and fuser unit have been designed for long life.

Environmentally Benign Waste Parts

The toner container is made out of a benign, flammable material. (Be sure to dispose of containers according to local laws and regulations.)

Sleep Mode

Conserves energy during the printer's idle periods.

Ecoprint

Extends the toner yield by reducing the amount of toner used on the page.

Standard Bi-directional Parallel Interface

Supports high-speed data exchange with the computer.

Wide Variety of Available Fonts

The printer comes with 45 PCL-compatible fonts and a line printer bitmap font installed.

PRESCRIBE 2e Command Language

PRESCRIBE 2e provides features including advanced graphics capabilities that allow you to print any conceivable outline shape or solid form. Also provided are a variety of special effects, such as patterned fills, gray-scale shading, a user-accessible print image model, and multiple page orientations and print directions within the same page.

PDF417 Two-dimensional Bar Code

The printer includes a capability that allows the user to implement two-dimensional stacked bar code symbology PDF417 (Portable Data File 417).

Simple Network Management Protocol (SNMP) Compliance

The printer supports SNMP and can be used as a network printer.

Kyocera PrintMonitor Utility

Provides network wide management of the Kyocera FS family of page printers. Refer to the readme file located in the *Kyocera Digital Library* CD-ROM (supplied with the printer) for details.

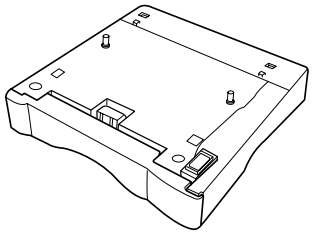
Remote Operation Panel Utility

This software displays a virtual operator panel on the computer connected to the printer either locally (through a parallel or serial interface) or over a network. You can use this utility to monitor the printer's basic settings and conditions on Windows 95/98 or Windows NT 4.0 operating systems. The **Remote Operation Panel** utility is provided on the *Kyocera Digital Library* CD-ROM supplied with the printer.

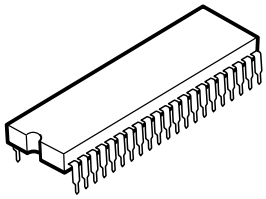
Options

The following options are available for the printer:

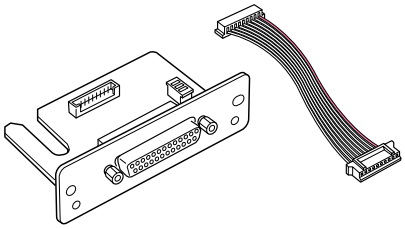
PF-17 Paper Feeder



PK-6 KPDL2 Upgrade Kit



IB-10E Serial Interface Board Kit



Network Boards

Contact your Kyocera dealer for purchasing information on the network board that is best suited for use with this printer.

Caution

Only network boards operating on DC 3.3V can be used in this printer.

Guide to the Manuals

Item	Description
Installation Manual (paper manual)	Describes procedures from printer setup to printing a test page.
User's Manual (this manual)	Guides you through topics concerning the operations and maintenance of the printer.
PRESCRIBE 2e Programming Manual	Describes how to use the PRESCRIBE 2e commands and their parameters in detail for experienced users.
PDF417 Two-Dimensional Bar Code Implementation Manual	Includes a PDF417 overview and explains PRESCRIBE 2e commands for use with two-dimensional barcodes.

Guide to the User's Manual

This *User's Manual* guides you through the following topics:

Chapter 1 Basic Settings and Operations

This chapter describes the names and functions of the keys and indicators on top of the printer. Further, it explains how to make printer settings using the **Remote Operation Panel** utility contained on the *Kyocera Digital Library* CD-ROM supplied with the printer.

Chapter 2 Printer Driver

This chapter explains how to install the printer driver, and how to print from applications.

Chapter 3 Maintenance

This chapter explains how to replace the toner container and how to care for your printer.

Chapter 4 Troubleshooting

This chapter explains how to handle printer problems that may occur, such as paper jams.

Chapter 5 Paper Selection

This chapter explains the types of paper that can be used with the printer.

Appendix A Fonts

This appendix explains about and lists the printer's internal fonts.

Appendix B Expansion Memory Installation

This appendix explains how to expand the printer's memory.

Appendix C Host Computer Interface

This appendix describes the pin assignment and specifications for the printer's parallel interface and optional serial interface.

Appendix D Printer Specifications

This appendix lists the printer's specifications.

Appendix E Glossary

This appendix explains the terminology used in this manual.

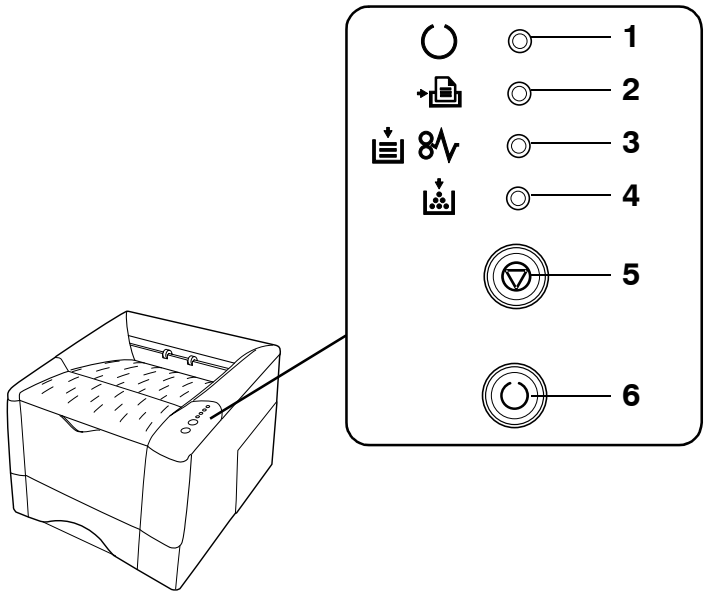
Chapter 1 Basic Settings and Operations

This chapter explains the following topics:

- **Operator Panel**
- **Remote Operation Panel Utility**
- **Configuring the Printer**
- **Paper**
- **Printer Environment**
- **Other Settings**

1.1 Operator Panel

The operator panel on top of the printer consists of four indicators and two keys. The four indicators light, flash, and go off in combination, indicating the printer's status. The keys perform operations, such as canceling data, switching the printer mode between online and offline status, and printing status pages.

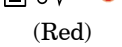


Note

The numbers used in the above figure are referred to in the "Reference" column of the table on the following page.

1.1.1 Indicators

Refer to the following table for the name and description of each indicator. The same indicator can have a variety of meanings, depending on the speed at which it is flashing. For details, see ***Chapter 4***.

Reference	Name	Status	Meaning
1	Online indicator (Green)	Lit	Indicates online status (printing is possible).
		Flashing	• An error has occurred, but printing resumes when the key is pressed. • Offline status. You cannot print, but the printer can receive data. • The printer is in sleep mode.
		Off	Printing has stopped because an error has occurred.
2	Data indicator (Green)	Lit	The printer is processing data.
		Flashing	The printer is receiving data.
3	Attention indicator  (Red)	Lit	The printer cover is open.
		Flashing	• A paper jam has occurred. • The paper cassette is not inserted properly or the paper has run out.
		Off	The printer status is normal.
4	Toner indicator (Red)	Lit	The printer has stopped because the toner is exhausted.
		Flashing	The toner is running low.

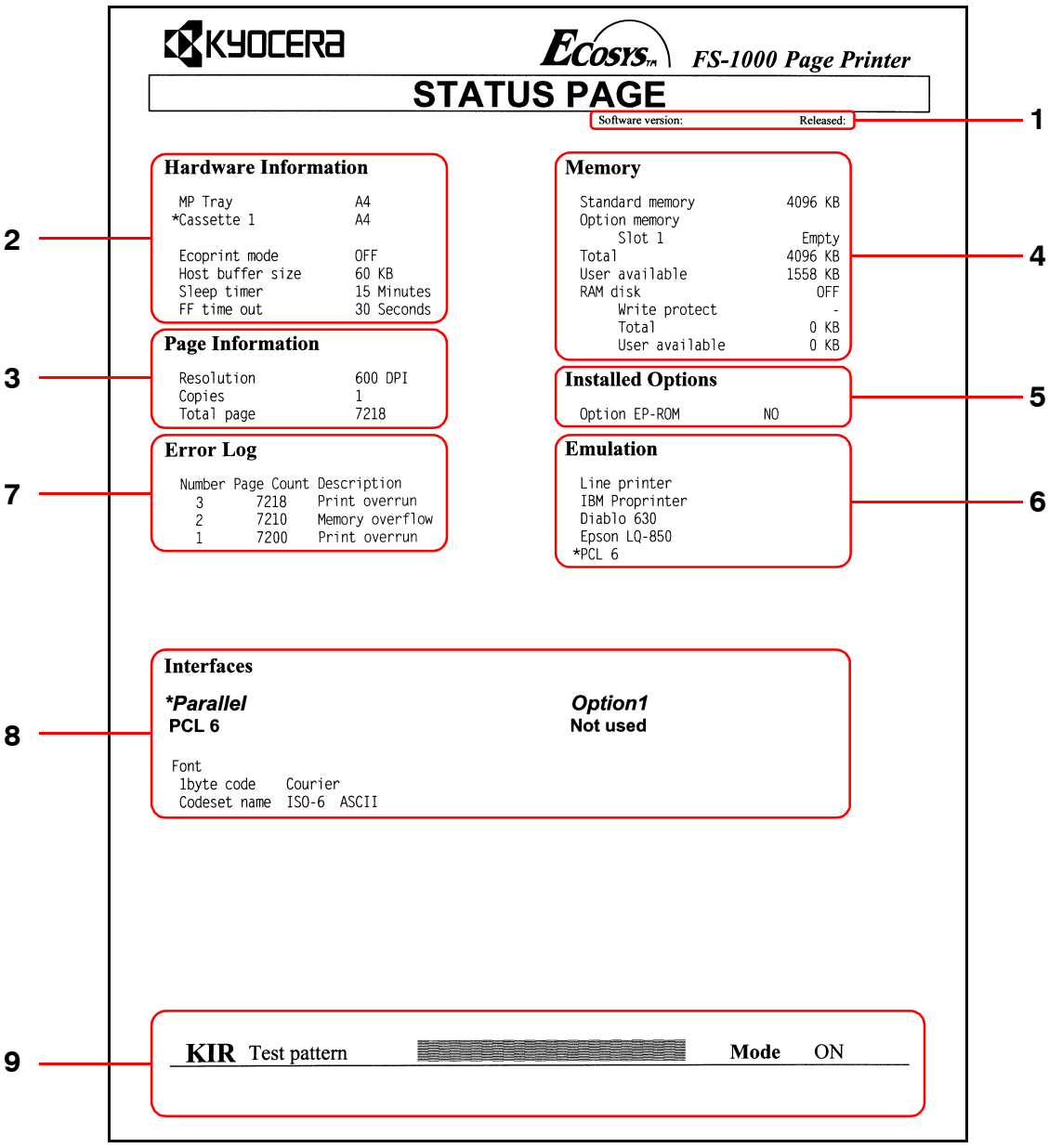
1.1.2 Keys

Refer to the following table for the name and description of the basic functions of each key.

Reference	Name	Function
5	key (Cancel key)	Cancels printing in progress when pressed for 1 second or more.
6	key (Go key)	• Switches between online and offline when pressed for less than 3 seconds. • Switches between the MP tray and paper cassette when the paper runs out. • Depending on the error message displayed on the **Remote Operation Panel**, there are cases where operation will continue after pressing this key. If such a message appears, operation resumes when this key is pressed. • Prints a standard status page* when pressed for 3 seconds or more and less than 10 seconds. • Prints a service status page when pressed for 10 seconds or more.

*: For a full description of the standard status page, see the next page. The service status page is used for service purposes.

The following is the printout of a typical standard status page. Its contents are explained in detail on the next page.



Items and values on the status page may vary depending on the printer's firmware version.

Note

1 — Software Version

This information shows the software (firmware) version and date of issue of the printer.

2 — Hardware Information

This information shows the currently selected paper source (indicated by an asterisk), paper size, and various other printer settings.

3 — Page Information

This information shows the currently selected resolution, number of copies printed to date, and the total page count.

4 — Memory

This information shows the amount of total memory installed in the printer, the amount of currently available memory, and the current status of the RAM disk (see page *1-35*).

5 — Installation Options

This shows the option(s) currently installed in the printer.

6 — Emulation

This shows all available emulations and the currently selected emulation (marked with an asterisk). The printer is shipped from the factory with PCL 6 emulation selected.

7 — Error Log

This displays the last three instances of the following four types of errors, listing them in the order of their occurrence: `KPDL Error Press GO`; `Memory overflow Press GO`; `Print overrun Press GO`; `RAM DISK err Press GO`. The most recent error is displayed on the top line of the Error Log. For error remedies, see section *4.3.3*. Error information is cleared when the printer's power is turned off.

8 — Interface Information

This information shows all interfaces installed in the printer and the currently selected interface (marked with an asterisk).

The Font section shows the font that is automatically selected when the printer starts up (default font). It is possible to set different default fonts for each interface.

9 — KIR Test Pattern

This shows the KIR test pattern. You can confirm whether KIR is on or off.

1.2 Remote Operation Panel Utility

The **Remote Operation Panel** utility is provided on the *Kyocera Digital Library* CD-ROM supplied with the printer. You can install the **Remote Operation Panel** on a computer that runs under Windows 95/98 or Windows NT 4.0 operating systems, and use it to change basic printer settings, monitor the current printer status, and display error messages (such as paper jam warnings) on the computer screen.

1.2.1 Requirements

The **Remote Operation Panel** utility is designed to run under Windows 95/98 or Windows NT 4.0 operating systems. With Windows 95/98 it can be used with either local (parallel or serial) or network (TCP/IP or IPX/SPX) connection. With Windows NT 4.0 it can only be used over a network.

Note

The Remote Operation Panel utility does not run under any other operating systems.

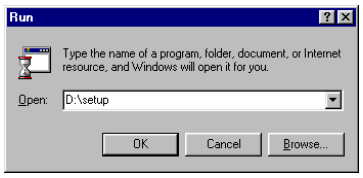
1.2.2 Installing the Remote Operation Panel

1 Insert the *Kyocera Digital Library* CD-ROM supplied with the printer into the CD-ROM drive of the computer.

After a few moments, the *Kyocera Digital Library* main menu appears. Click on **Printer Utilities**.

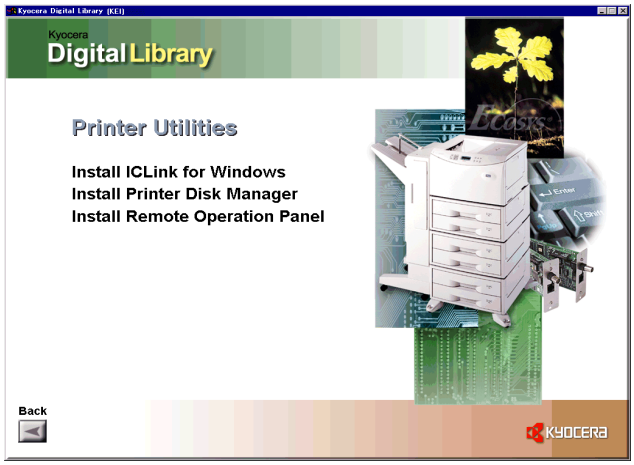
If this screen does not appear, click the Windows **Start** button and select **Run**.

Enter the following:
`[CD drive letter]:\setup`



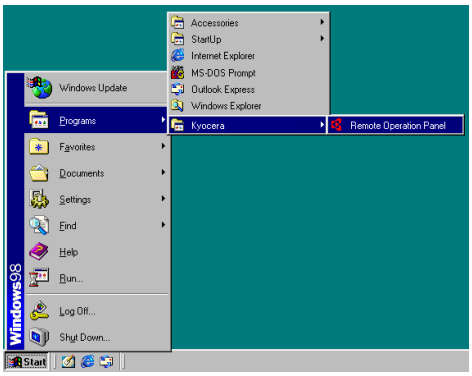
Click the **OK** button. The *Kyocera Digital Library* main menu appears.

2 Click on **Install Remote Operation Panel** to start **Remote Operation Panel** utility installation.

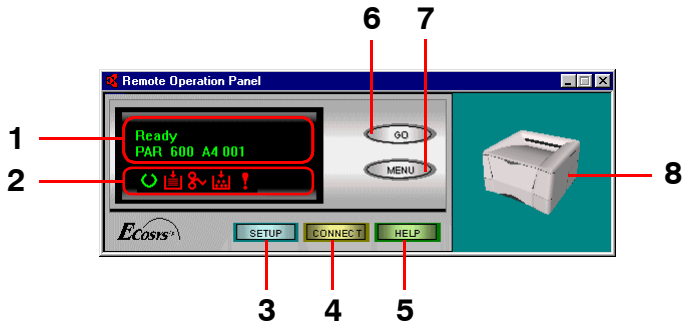


Starting the Remote Operation Panel

Once you have installed the **Remote Operation Panel**, click the Windows **Start** button, then click **Remote Operation Panel** from **Programs**. The **Remote Operation Panel** starts.



Remote Operation Panel Start-up Screen

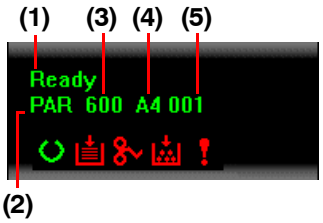


Functions of the Remote Operation Panel Utility

The following table explains the names and function of the parts of the **Remote Operation Panel** utility.

Note

The numbers appearing in the figure are referred to in the "Number" column of the table below.

Reference	Name	Function
1	Message display 	The printer status is displayed on the upper line (1) and the following information is displayed on the lower lines. (2) Active interface **PAR:** Standard bi-directional parallel interface **SER:** Optional serial interface (RS-232C/422A) **OPT:** Optional network interface (3) Resolution **300:** 300 dpi **600:** 600 dpi (default) (4) Paper size of the currently selected paper cassette (5) Number of copies to be printed When an error occurs, details of the error are displayed on the upper and lower lines.
2		Displays a suitable icon according to the printer's status. : The printer is ready to print. : The paper is exhausted or the cassette is not installed properly. Load more paper or close the cassette properly. : A paper jam has occurred. Refer to section *4.4* and remove the jammed paper. : Toner is running low or is exhausted. Replace with a new toner container. See section *3.1* : An error has occurred. Refer to the message displayed. See section *4.3*

(Continued on next page)

Number	Name	Function
3	**SET UP** button	This allows you to make the following basic settings for the **Remote Operation Panel** utility: • Status polling • Error notification • Virtual printer animation For details on these settings, see section ***1.3.1 Basic Settings for the Remote Operation Panel***.
4	**CONNECT** button	This allows you to select the type of connection between the printer and the computer — either local (via serial or parallel interface) or network. For details, see section ***1.3.2 Connecting the Remote Operation Panel Utility to the Printer***.
5	**HELP** button	Displays help messages.
6	**GO** button	This button appears only when the printer is connected to the computer via a network. It has the same function as the printer's ◎ key and does the following: • Switches the printer online and offline, prints and feeds out one page, and continues printing when `Press GO` error messages are displayed on the **Remote Operation Panel**.
7	**MENU** button	This is used to change various printer settings from the **Remote Operation Panel** utility. See page ***1-14***.
8	Printer image	This virtual printer animation graphically indicates the printer's status. For example, when you open the printer's top cover, the top cover on the printer image also opens. Note **It may take several minutes for a change in status to be reflected in the animation.**

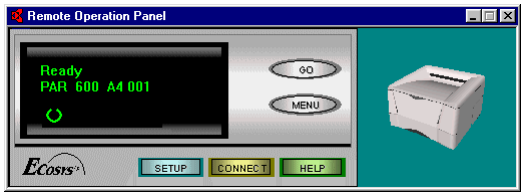
1.3 Configuring the Printer

This section explains how to set and confirm the printer's configuration from the **Remote Operation Panel** utility. The value set from the **Remote Operation Panel** utility becomes the printer's default setting. However, when printing, the printer may automatically switch to another setting, depending on the application software or printer driver settings.

1.3.1 Basic Settings for the Remote Operation Panel

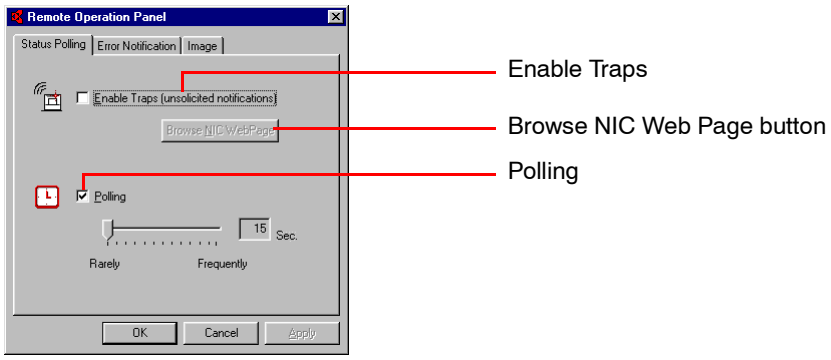
Before operating the **Remote Operation Panel**, you can change settings for polling, error notification, and whether you want to use the 3D virtual printer to monitor the printer status.

1 Click the **SETUP** button on the start-up screen.



2 The **Remote Operation Panel** appears. Read the follow explanations, then make the appropriate settings.

Status Polling



Enable Traps (unsolicited notifications)

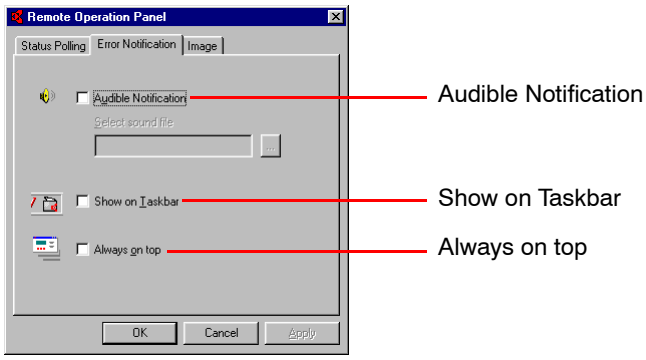
This allows the **Remote Operation Panel** utility to obtain and display information about the printer, such as the open/closed state of the top cover, that is output automatically by the network interface card in the printer. This requires that the network output of status information by the network interface card be enabled. To do this, click on the **Browse NIC Web Page** button to call up SNMP trap notification from the network interface card homepage.

Polling

With **Polling** activated (check box checked), the **Remote Operation Panel** utility logs itself onto the printer and automatically recognizes printer changes at regular intervals. This duration of the interval can be configured by moving the slider with the mouse. The default setting is 15 seconds. **Polling** must normally be left activated (check box checked).

Error notification

Each of the following functions are activated when the appropriate check box is checked.



These settings allow you to determine the way your computer notifies you of errors:

Audible Notification

A sound is played when an error occurs. Specify the .wav file to be used for the sound by pressing the button on the right and browsing for the folder that contains it.

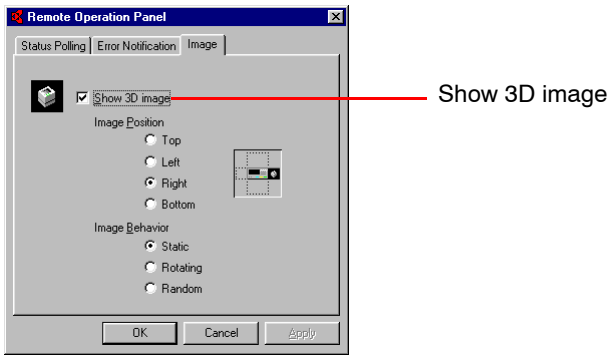
Show on Taskbar

Error notification is given by displaying an icon on the task bar.

Always on top

Error notification is given by a message that is displayed on top of all other windows that may be currently open on the desktop.

Image



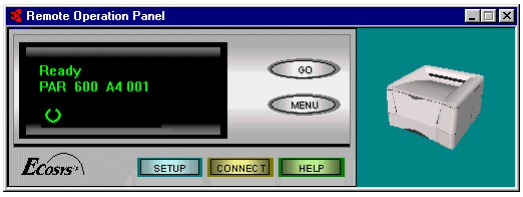
Show 3D image

This displays the 3D virtual printer for monitoring the printer status. You can select the position of the animation in reference to the **Remote Operation Panel** utility, as well as the motion of the animation from **Static**, **Rotating**, and **Random**.

1.3.2 Connecting the Remote Operation Panel Utility to the Printer

The **Remote Operation Panel** utility can be used whenever the printer is connected to the computer via the parallel or serial interface or through a network interface (TCP/IP or IPX/SPX). To establish the connection to the printer, proceed as follows:

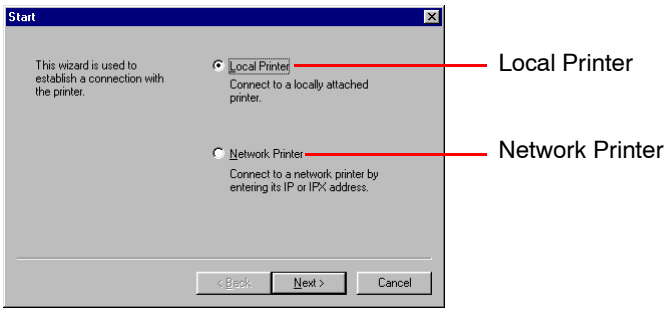
1 Click the **CONNECT** button on the start-up screen.



2 On the connection wizard:

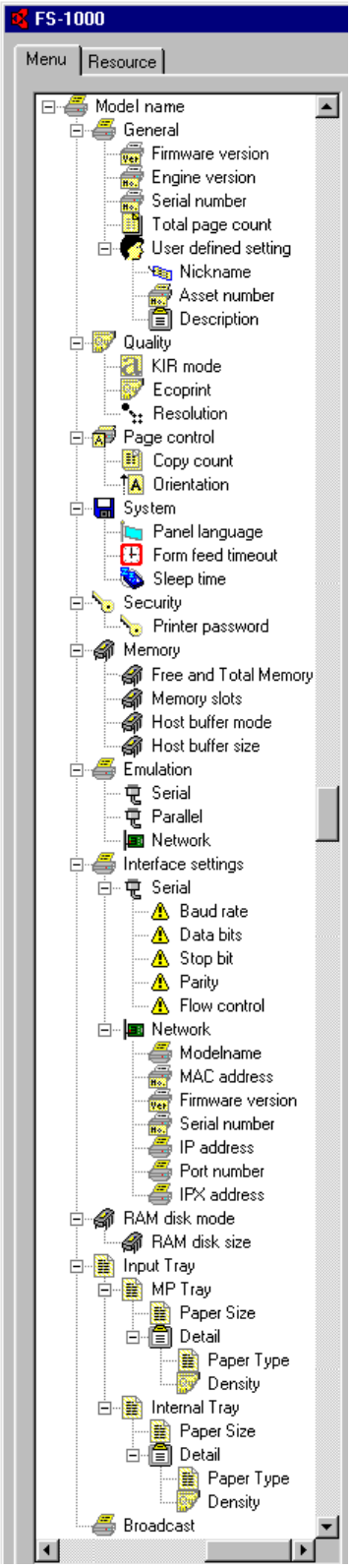
a. Click **Local Printer** to connect to a locally attached printer.

b. Click **Network Printer** to connect to a network printer.


Start
This wizard is used to establish a connection with the printer.
Local Printer
Connect to a locally attached printer.
Network Printer
Connect to a network printer by entering its IP or IPX address.
< Back
Next >
Cancel
Local Printer
Network Printer

3 Depending on the connection type you have chosen above, follow the instructions displayed by the wizard.

1.3.3 Menu Items



When you click the **MENU** button on the **Remote Operation Panel** utility, the printer menu as shown on the left appears. (This screen is an example only, and the entire menu is not actually displayed.) You can display current settings by clicking each item. The contents displayed will vary depending on the optional devices installed and whether the connection is through a network or local (through a parallel or serial interface).

Note

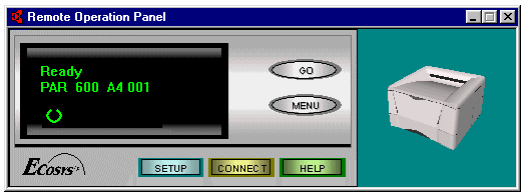
If you have set a password for the Remote Operation Panel utility, a password prompt appears. Enter your password and click the OK button. The Menu dialog box appears.
For details on passwords, see page *1-41*.

1.4 Paper

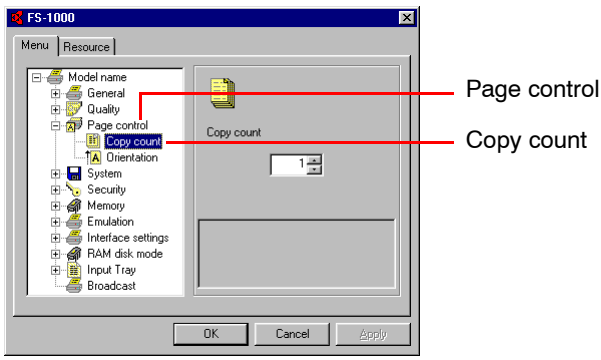
1.4.1 Number of Copies to be Printed

This sets the number of copies to be printed. The value set becomes the default for the current interface. The default setting is 1.

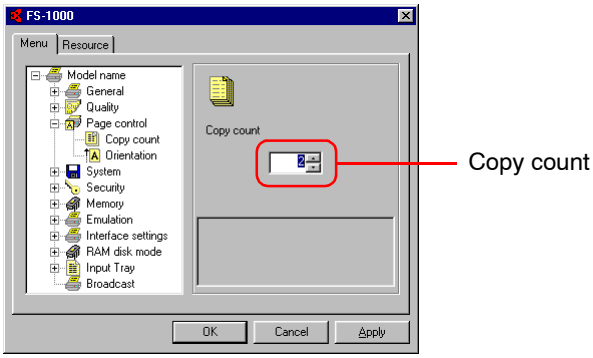
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box is displayed. Double click **Page control**, then click **Copy count**.



3 Click the ▲ or ▼ button in the combo box on the right, or directly input the number of copies you want to set in the combo box. You can make settings up to 999.

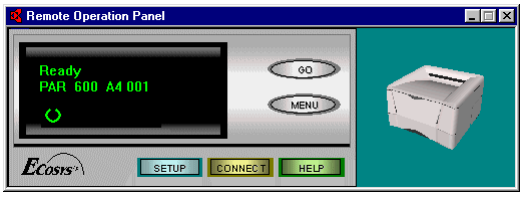


4 After you have input the number of copies, click the **OK** button to return to the start-up screen. The number of copies to be printed is changed. After the setting is made, the number you set is displayed on the **Remote Operation Panel**'s message display.

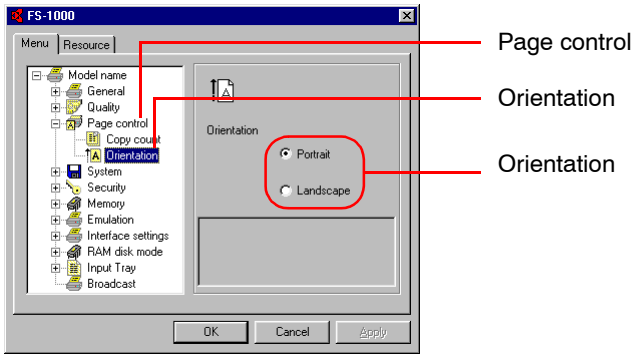
1.4.2 Page Orientation

This sets the page orientation. The default setting is Portrait.

1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Page control**, then click **Orientation**. Using the radio buttons on the right, select either **Portrait** or **Landscape** as the page orientation.

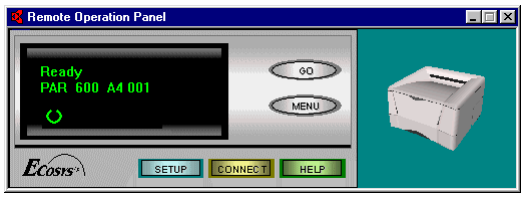


3 After you have selected the orientation, click the **OK** button to return to the start-up screen. The orientation is changed.

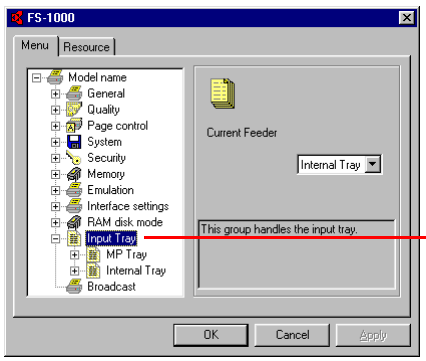
1.4.3 Paper Source

This sets the paper source. The default setting is the printer's cassette (Internal Tray).

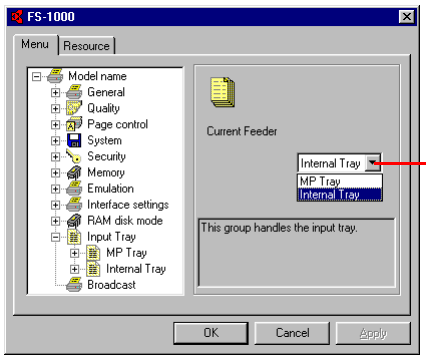
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Input Tray**.



3 Click the ▼ button next to the pull-down menu on the right side of the screen to display the available paper sources. Select the paper source you want to set.

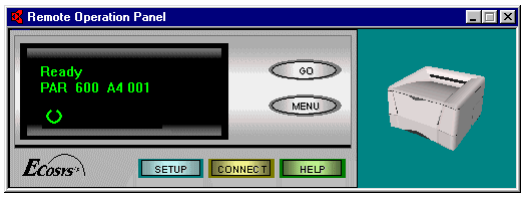


4 After you have selected a paper source, click the **OK** button to return to the start-up screen. The default paper source is changed.

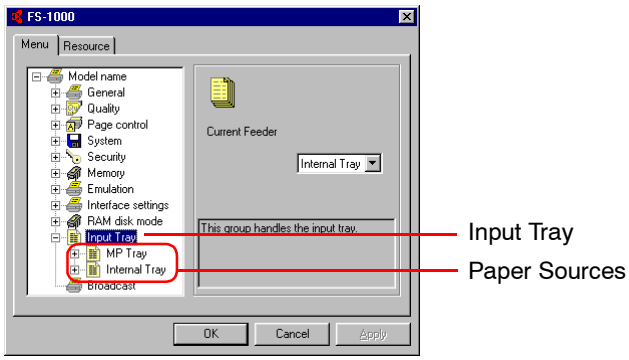
1.4.4 Paper Size

You can set the paper size for each paper source. The default is Letter size for the U.S.A. and Canada, and A4 for all other countries.

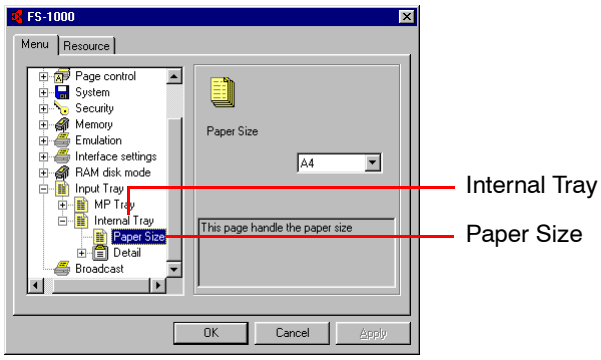
1 Click the **MENU** button on the start-up screen.



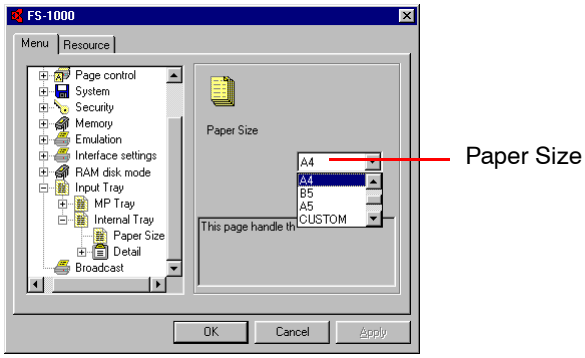
2 The **Menu** dialog box appears. Double click **Input Tray** and the printer's paper sources are displayed.



3 Double click **Internal Tray**, then click **Paper Size**.



4 Click the ▼ button next to the pull-down menu on the right side of the screen to display the available paper sizes. Select the paper size you want to set. For paper sizes that can be fed from the printer, see ***Chapter 5***.



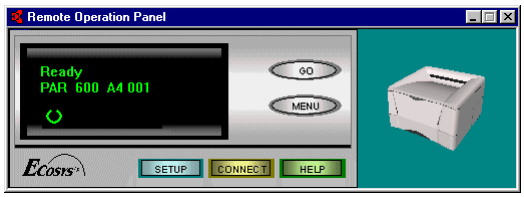
5 To set the paper size for the MP Tray, double click **MP Tray** and repeat the above procedure.

6 After you have selected a paper size, click the **OK** button to return to the start-up screen. The new paper size is set for the paper source.

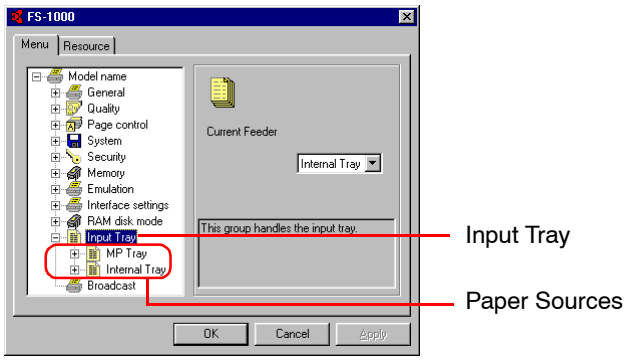
1.4.5 Paper Type Settings for Paper Sources

You can select the paper type (thickness) of thick, normal, or thin for each paper source. The default setting is normal.

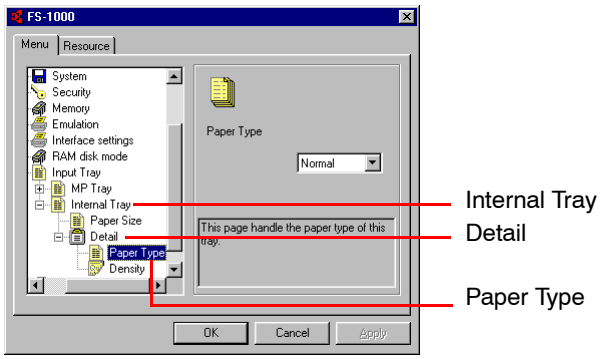
1 Click the **MENU** button on the start-up screen.



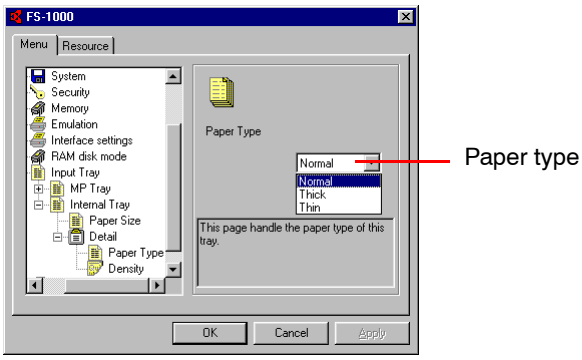
2 The **Menu** dialog box appears. Double click **Input Tray** and the printer's paper source is displayed.



3 Double click **Internal Tray** and **Detail** in that order, then click **Paper Type**.



4 Click the ▼ button next to the pull-down menu on the right side of the screen. Select a paper thickness from Normal, Thick, and Thin.



Refer to the following table for standard paper weight settings:

Paper thickness setting	Corresponding paper weight
Thin	Less than 64 g/m^2
Normal (default setting)	64 to 90 g/m^2 Transparency (MP Tray only)
Thick	Greater than 90 g/m^2 Envelope (64 to 90 g/m^2) [MP Tray only]

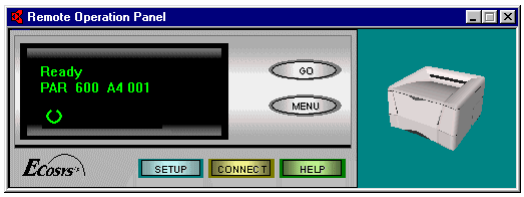
5 To make the paper thickness settings for the MP Tray, double click **MP Tray** and repeat the above procedure.

6 After you have selected a paper thickness, click the **OK** button to return to the start-up screen. The paper source paper thickness settings are changed.

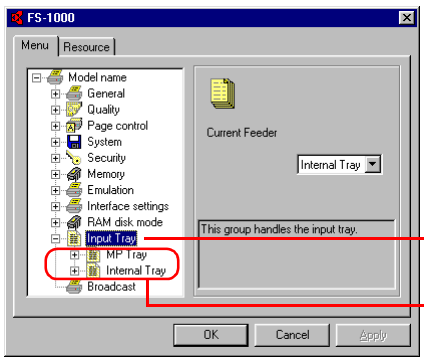
1.4.6 Paper Source Properties

You can display information about the paper source, such as whether paper is loaded and the maximum paper capacity.

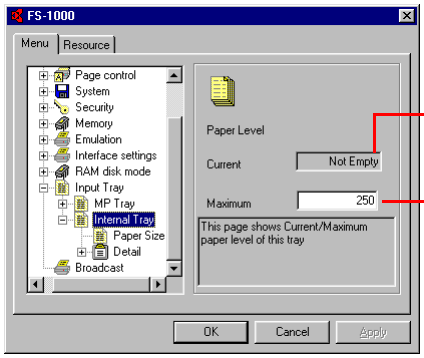
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Input Tray**. The printer's paper sources are displayed. If the optional paper feeder is installed, **PF-17** is displayed under **Internal Tray**.



3 Click the paper source whose properties you wish to confirm.

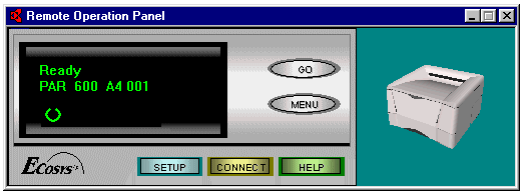


1.5 Printer Environment

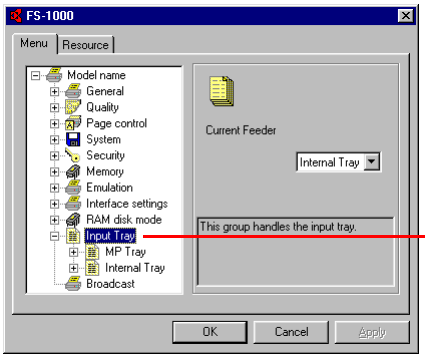
1.5.1 Print Density

You can set the print density for each paper source. You can choose between five levels of density where 1 is the lightest and 5 is the darkest. The default setting is 3.

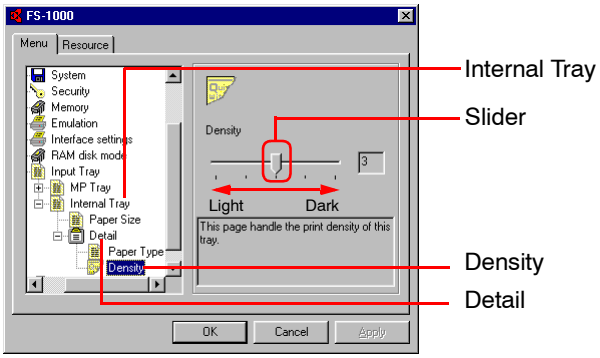
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Input Tray** and the printer's paper source is displayed.



3 Double click **Internal Tray** and **Detail** in that order, then click **Density**. Use the mouse to move the slider on the right side of the screen to the left (light) and right (dark).

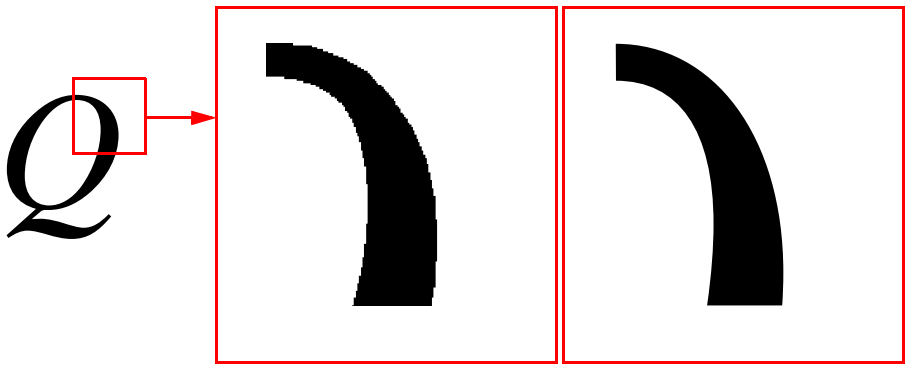


4 To set the density for the MP Tray, double click **MP Tray** and repeat the above procedure.

5 After you have selected the density, click the **OK** button to return to the start-up screen. The paper source print density setting is changed.

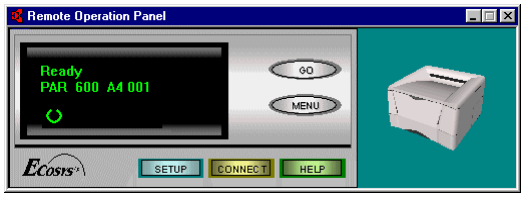
1.5.2 KIR

This printer incorporates the **KIR** (Kyocera Image Refinement) smoothing function. KIR uses software to enhance resolution, resulting in high-quality printing. The default setting is **On**.

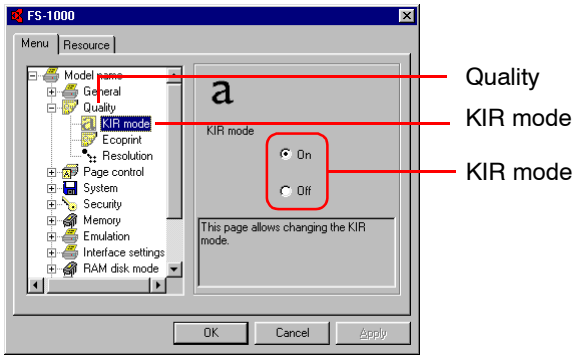


With KIR **Off** With KIR **On**

1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Quality**, then click **KIR mode**. You can toggle the KIR mode **On** and **Off** using the radio buttons on the right side of the screen.



3 After you have selected **On** or **Off**, click the **OK** button to return to the start-up screen. The KIR mode is changed.

1.5.3 Ecoprint

Ecoprint allows you to reduce the amount of toner used, so that you can save on printing costs. You can set Ecoprint mode **On** as follows. The default setting is **Off**.

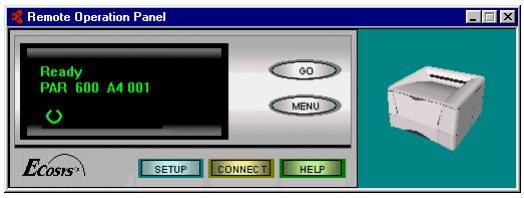
Note

Ecoprint does not effect printing speed.

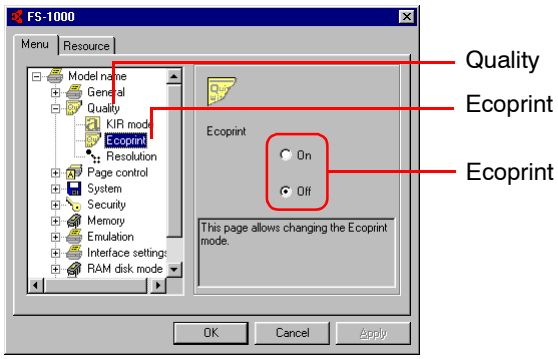
With Ecoprint **Off** (default)

With Ecoprint **On**

1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Quality**, then click **Ecoprint**. You can toggle the Ecoprint mode **On** and **Off** using the radio buttons on the right side of the screen.

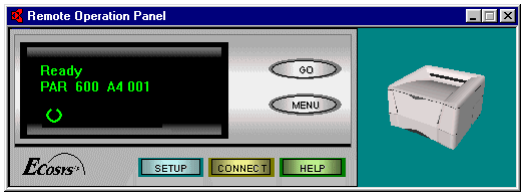


3 After you have selected **On** or **Off**, click the **OK** button to return to the start-up screen. The Ecoprint mode is changed.

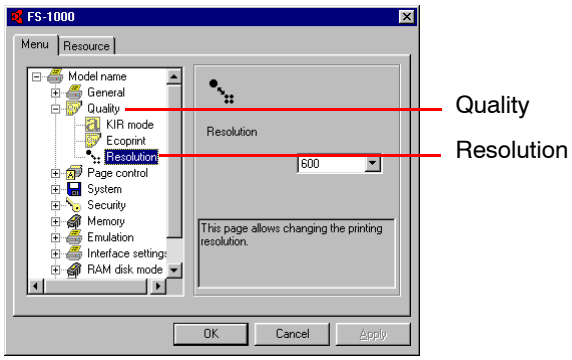
1.5.4 Resolution

You can set the resolution for printing. The default setting is **600** dpi.

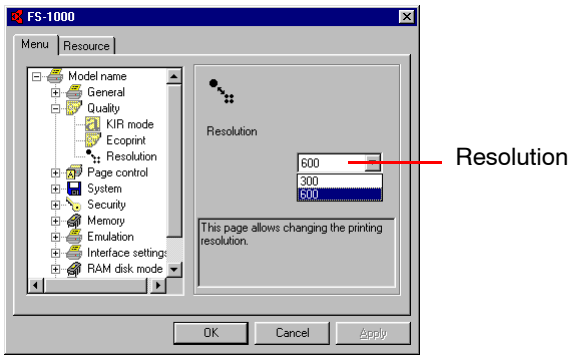
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Quality**, then click **Resolution**.



3 Press the ▼ button next to the pull-down menu on the right side of the screen, and select **600** dpi or **300** dpi.

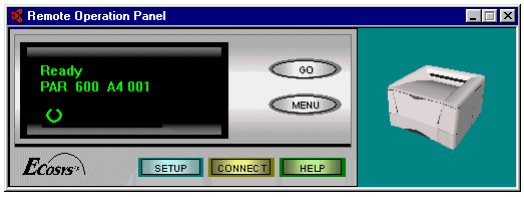


4 After you have selected a resolution, click the **OK** button to return to the start-up screen. The resolution is changed.

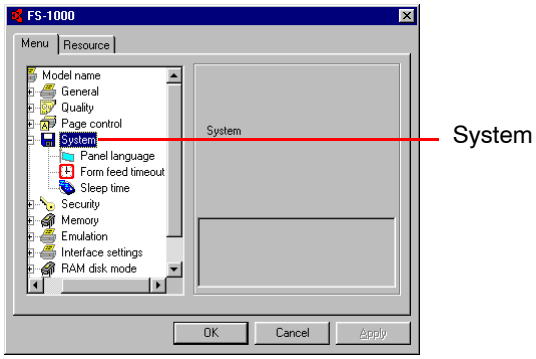
1.5.5 Form Feed Timeout

You can set the amount of time before the last page automatically prints when print data ends without end of page information. The default setting is 30 seconds.

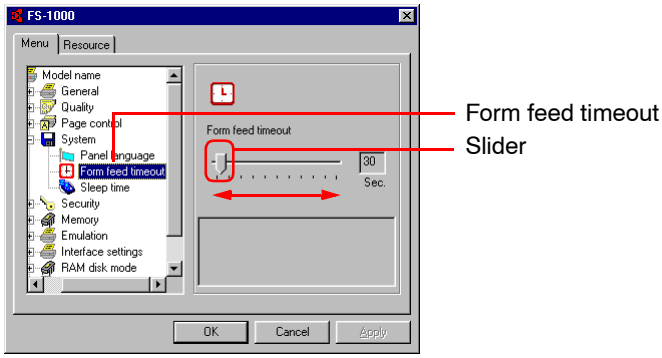
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **System**.



3 Click **Form feed timeout**. Use the mouse to move the slider on the right side of the screen to the left or right. You can set the time in 5-second intervals from 0 to 495 seconds. To disable form feed timeout, set the time to 0.

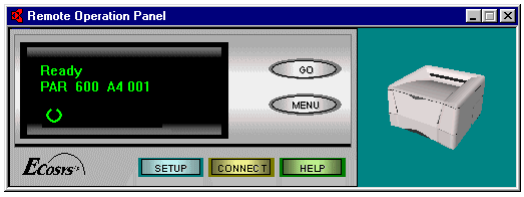


4 After you have set a time, click on the **OK** button to return to the start-up screen. The form feed timeout time is changed.

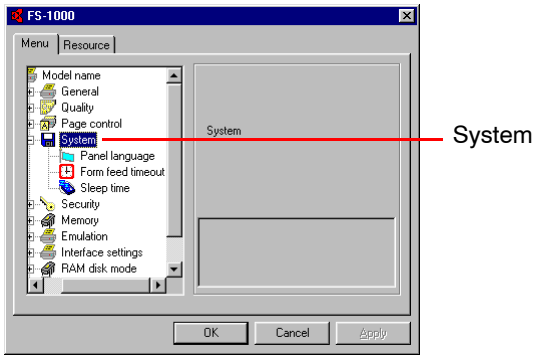
1.5.6 Sleep Timer

The printer has a sleep timer to conserve power when the printer is not printing, processing, or receiving data. You can adjust the timer value; that is, the amount of time before the printer enters sleep mode in the absence of data. The default setting is 5 minutes.

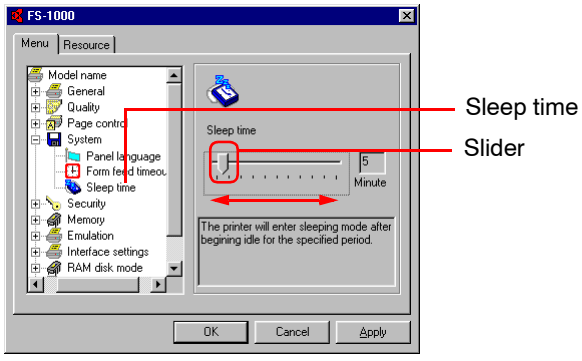
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **System**.



3 Click **Sleep time**. Use the mouse to move the slider on the right side of the screen to the left or right. You can set the time in 5-minute intervals from 0 to 120 minutes. To turn the sleep timer off, set the time to 0.

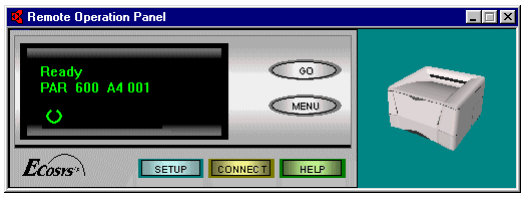


4 After you have set the time, click the **OK** button to return to the start-up screen. The time interval for the sleep timer is changed.

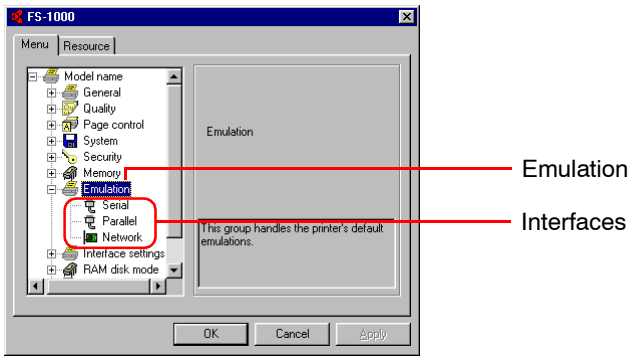
1.5.7 Emulation

You can set the default emulation for each of the printer's interfaces. The default setting is PCL.

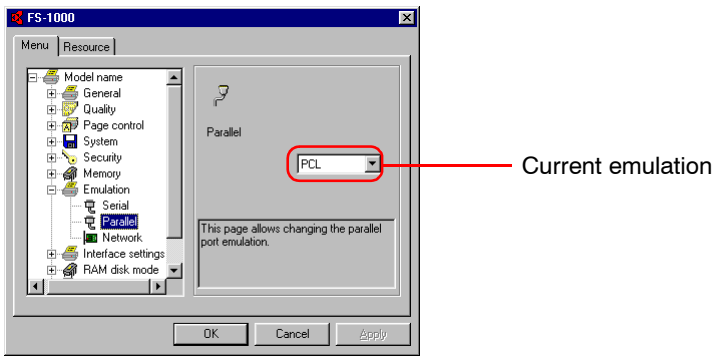
1 Click the **MENU** button on the start-up screen.



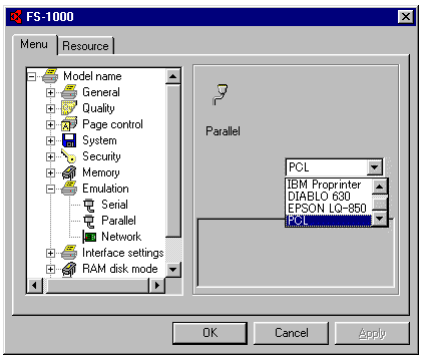
2 The **Menu** dialog box appears. Double click **Emulation**. The available interfaces are displayed.



3 Click the interface whose emulation you want to change. The current emulation is displayed in the pull-down menu box on the right side of the screen.



4 Click the ▼ button next to the pull-down menu on the right side of the screen, and select an emulation.



The printer emulates operation of the following printers:

- Line printer
- IBM Proprinter
- DIABLO 630
- EPSON LQ-850
- PCL
- KPDL2 (Optional*)

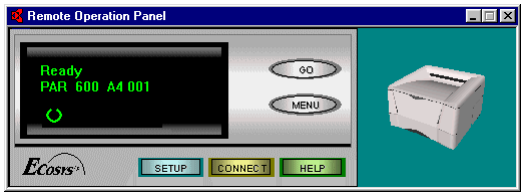
5 After you have selected an emulation, click the **OK** button to return to the start-up screen. The emulation is changed.

*:KPDL2 is displayed only if the optional **KPDL2 Upgrade Kit [PK-6]** is installed on your printer.

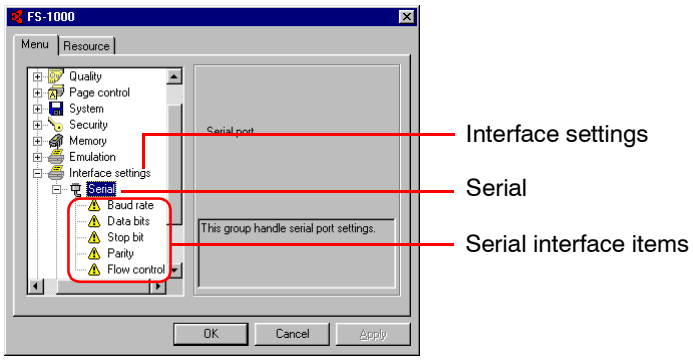
1.5.8 Serial Interface Parameters

This setting is only available if you have the optional **Serial Interface Kit (IB-10E)** installed on your printer. You can change the baud rate, data bits, stop bit, parity, and flow control for the serial interface. If these settings are changed, you must also change the serial interface parameters on your computer.

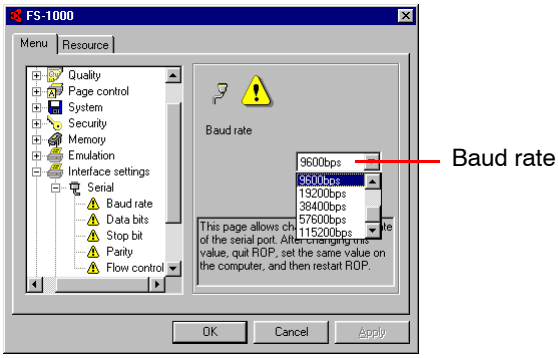
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Interface settings** and **Serial** in that order. The serial interface items are displayed on the screen.



3 Click the item you want to change, then select the value you want to set from the pull-down menu.



The following table contains default value settings:

Parameter	Default value
Baud rate	9600
Data bits	8
Stop bit	1
Parity	None
Flow control	DTR, positive, and XON

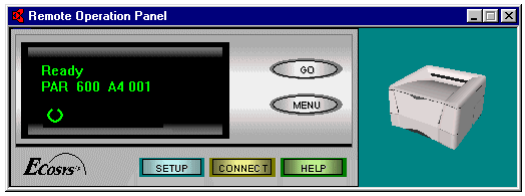
4 After you have made settings, click the **OK** button to return to the start-up screen.

5 After making the above changes, change the corresponding settings for the serial interface on the computer. Once changes are complete, start the **Remote Operation Panel**.

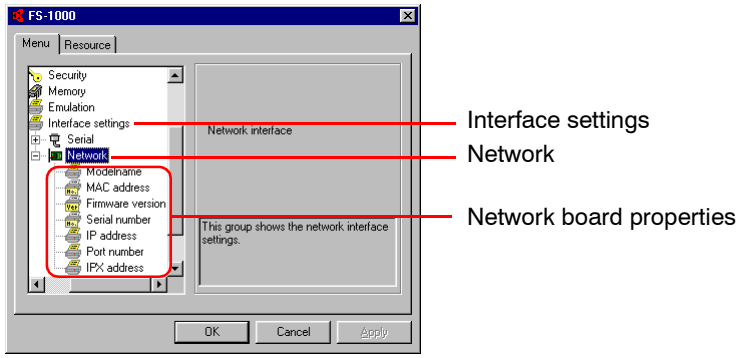
1.5.9 Network Board Properties

You can display information about the network board, such as its version and serial number, model name, and network addresses.

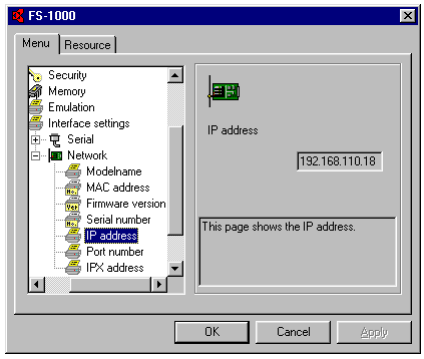
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Interface settings** and **Network** in that order. The network board properties are displayed as shown in the figure.



3 Click on an item to display its contents on the right side of the screen. The example below shows the screen that appears when you click on **IP address**.



4 After confirming the properties, click the **OK** button to return to the start-up screen.

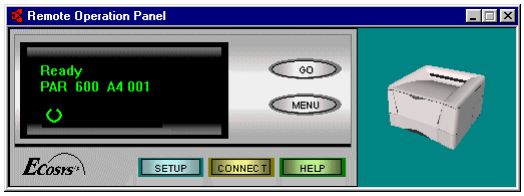
1.5.10 RAM disk

If the printer's total memory is more than 12 MB, you can use the RAM disk function. RAM disk enables electronic sorting, which reduces the overall amount of time required for printing. The default setting is **Off**.

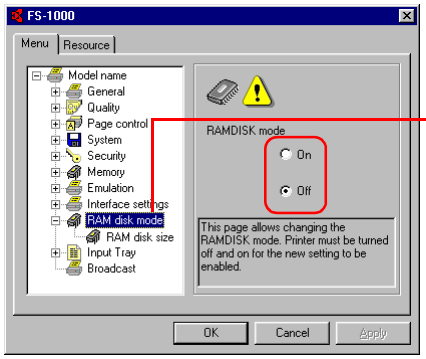
Note

- **Data contained on the RAM disk is lost when the printer is reset or the power is turned off.**
- **The RAM disk is set from the printer's user available memory. Print speed may be slowed or insufficient memory warnings may occur, if the RAM disk size is inappropriate, or if the print data is too complex.**

1 Click the **MENU** button on the start-up screen.



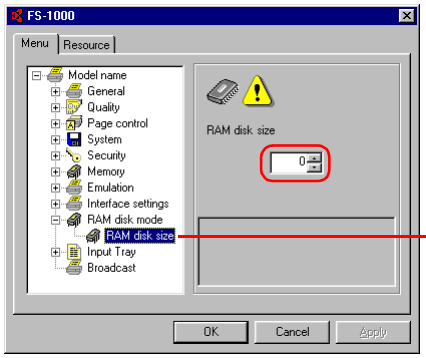
2 The **Menu** dialog box appears. Double click **RAM disk mode**. Using the radio buttons on the right side of the screen, you can toggle RAM disk mode On and Off.



3 Set the size of the RAM disk. Click **RAM disk size**. Set the size by clicking the ▲ and ▼ buttons in the combo box on the right side of the screen, or input the value directly into the combo box.

Note

The maximum RAM disk value should be 9 MB less than the printer's total memory. (If the printer's total memory is 21 MB or more, the RAM disk size is fixed to 12 MB.)



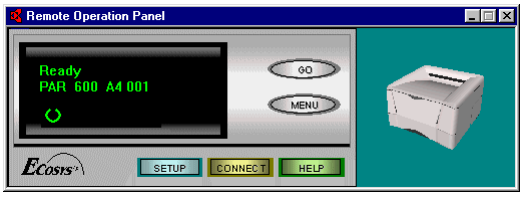
4 After making settings, click the **OK** button to return to the start-up screen.

5 Turn the printer's power off and on again to make the new setting effective.

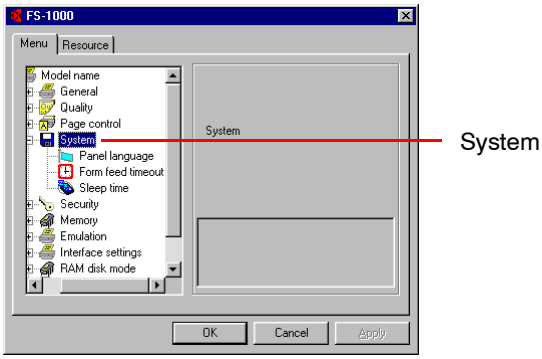
1.5.11 Remote Operation Panel Display Language

You can select from six languages for the **Remote Operation Panel** message display: English (U.S.A), English (U.K), English (Australia), French, German, and Italian. The default setting is English (U.S.A).

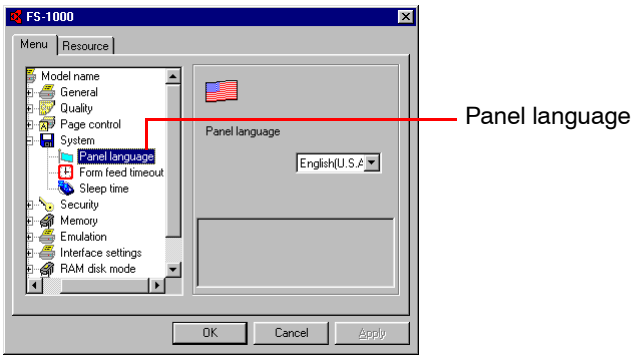
1 Click the **MENU** button on the start-up screen.



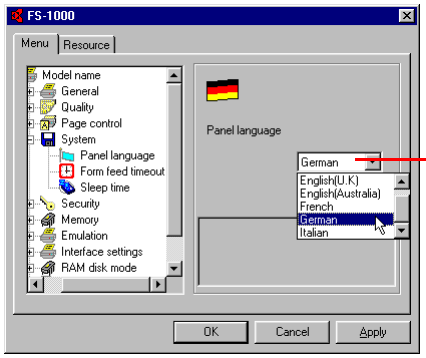
2 The **Menu** dialog box appears. Double click **System**.



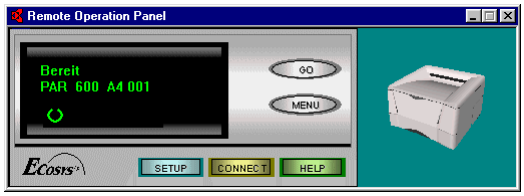
3 Click **Panel language**.



4 Click the ▼ button next to the pull-down menu on the right side of the screen, and select a language. (German is selected in the following example.)



5 After you have selected a language, click the **OK** button to return to the start-up screen. The screen changes to the selected display language.



The display language is changed to German.

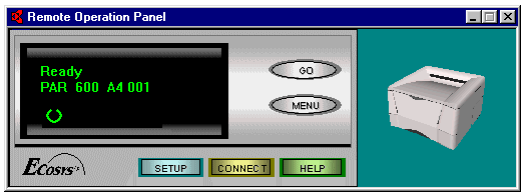
The language on the panel buttons automatically reflect the language of the Windows operating system on which the **Remote Operation Panel** utility is installed.

1.6 Other Settings

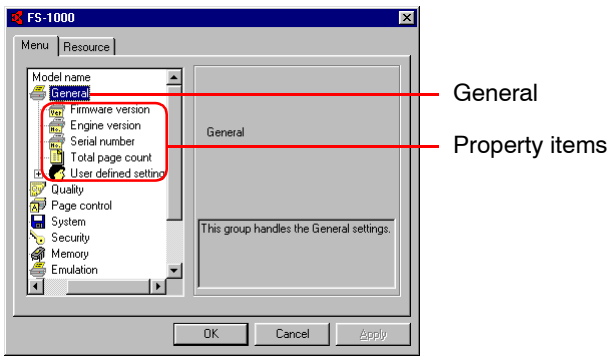
1.6.1 Printer Properties

You can confirm items such as the printer's serial number and the total number of copies printed to date.

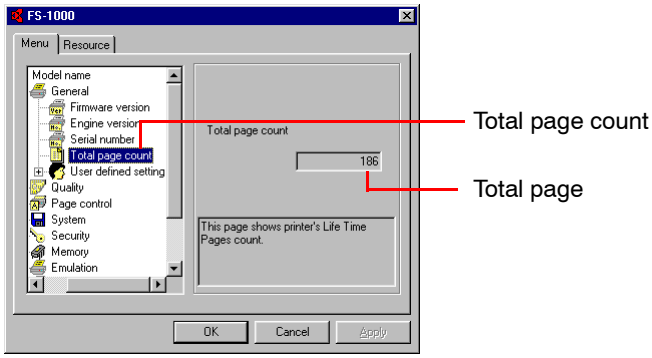
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **General**, and the property items are displayed.



3 Click the item you want to confirm to display the contents on the right side of the screen. **Total page count** was clicked to display the following sample screen.



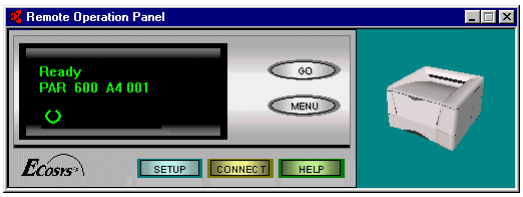
4 After confirming settings, click the **OK** button to return to the start-up screen.

1.6.2 Password for the Printer

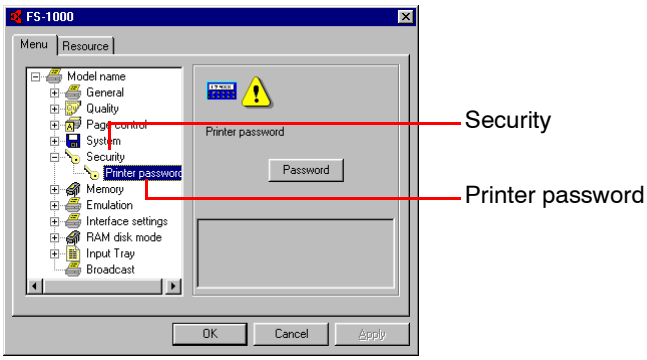
When connected to a network, you can set a password for your printer from the **Remote Operation Panel**. If a password is set, you must enter the correct password in order to change settings from the **Remote Operation Panel**. However, you can print without entering the password.

A password can be an ASCII character string of up to 15 characters and is case-sensitive. The space character is not allowed as part of the password.

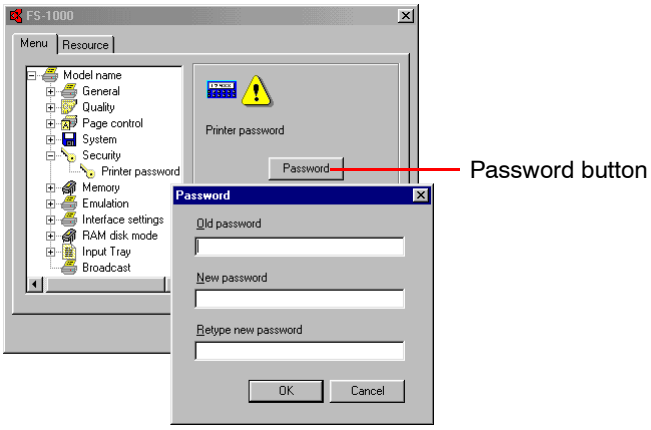
1 Click the **MENU** button on the start-up screen.



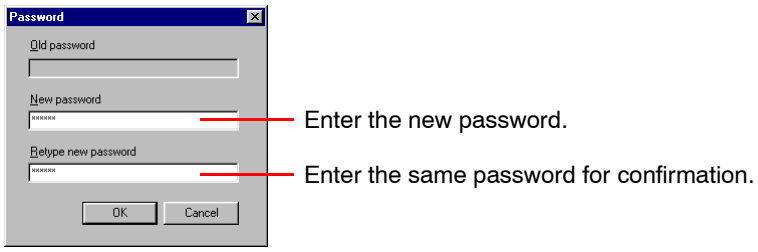
2 The **Menu** dialog box appears. Double click **Security**, then click **Printer password**.



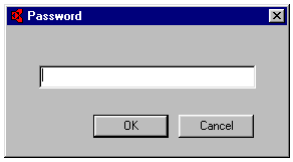
3 Click the **Password** button. The **Password** settings dialog box appears.



4 Enter the password you want to set in **New password**. For confirmation, enter the same password in **Retype new password**.



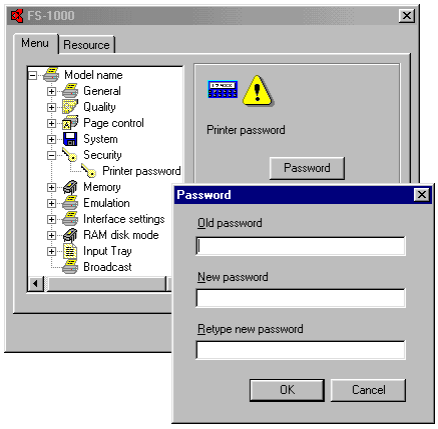
Click the **OK** button. The password is set for the **Remote Operation Panel**. We recommend that you record your password so that you do not forget it. Next time you click the **MENU** button, a password prompt appears as shown below. Enter your password and click the **OK** button. The **Menu** dialog box appears.



To Change the Password

Perform the following procedure when you want to change your password or remove the password function from the **Remote Operation Panel** utility.

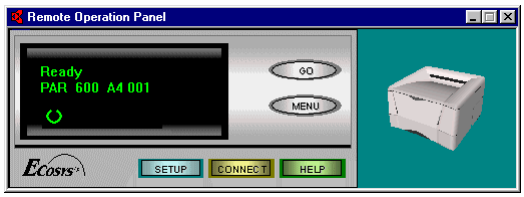
Display the password settings screen (page *1-42*) and enter your current password in **Old password**. To set a new password, enter your new password in **New password** and **Retype new password**, then click the **OK** button to set the new password. To remove the password function, leave **New password** and **Retype new password** blank, then click the **OK** button.



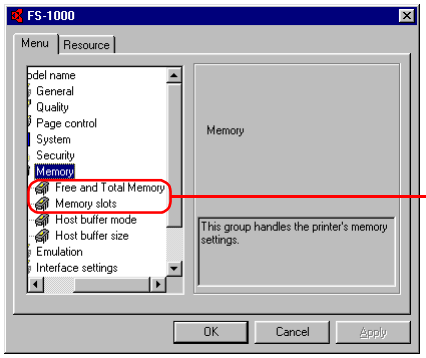
1.6.3 Printer Memory Status

You can confirm how much memory is installed and available as free memory in the printer. You can also obtain information about the number of the memory slot in the printer (for the FS-1000, this is 1).

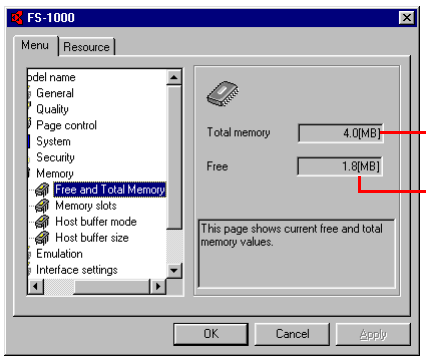
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click **Memory** to display the memory items.



3 Click on **Free and Total Memory** to confirm the free memory and total memory for the printer. Click on **Memory slots** to see the number of the memory slots in the printer (1).



Note

For Host buffer items, see the next section.

4 After confirming the printer's memory status, click the **OK** button to return to the start-up screen.

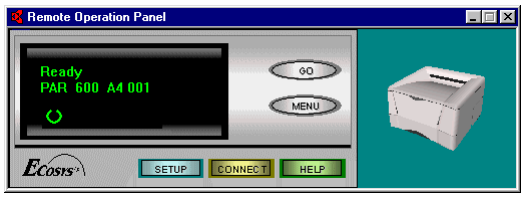
1.6.4 Host buffer

Host buffer is the shared memory area in the printer's main memory that temporarily stores print data sent from the host computer for each interface. The printer has two host buffers—buffer #1 and buffer #2—to simultaneously handle the print data on two interfaces. The way the host buffers receive data can be changed by selecting **Host buffer mode** as described below. The size shared for the host buffers can be adjusted by changing the value for **Host buffer size**.

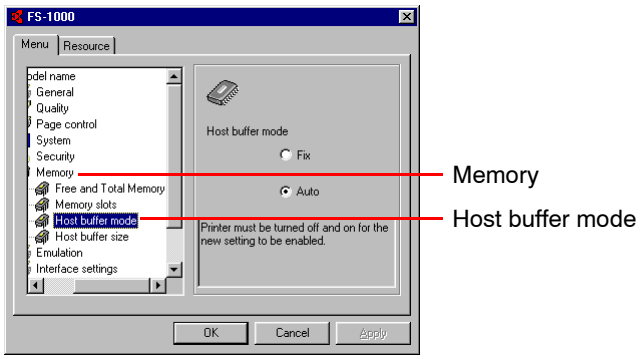
When **Host buffer mode** is set to **Auto**, the print data arriving from the computer is stored in whichever of the two buffers is empty. As data begins arriving at the other interface, it is stored in the other host buffer. When **Host buffer mode** is set to **Fix**, buffer #1 only stores data arriving at the parallel interface; and buffer #2 only stores data arriving at the option interface (if installed). The default setting is **Auto**.

The size of each host buffer can be changed by using **Host buffer size**. The factory setting is 60 kB for the total size of both buffers and can be changed using the PRESCRIBE FRPO H8 command (See the ***Programming Manual*** on the CD-ROM for details). The total host buffer size can be between 5 kB and the printer's free memory size.

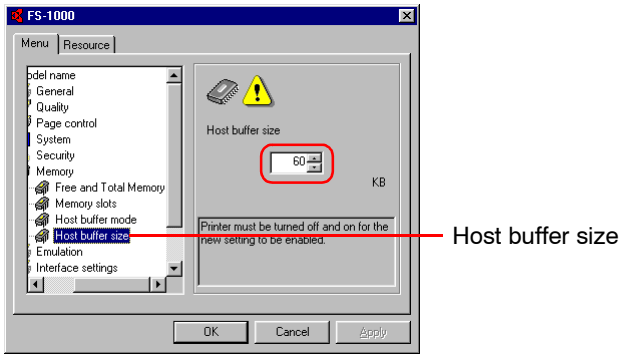
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box is displayed. Double click **Memory**, then click **Host buffer mode**. Using the radio buttons on the right, select either **Fix** or **Auto**.



3 Click **Host buffer size**. Click the ▲ or ▼ button in the combo box on the right. The total host buffer size is increased or decreased in 1 kB increments. You can input the host buffer size directly in the number field.



4 Turn the printer's power off and on again. The setting becomes effective when you restart the printer.

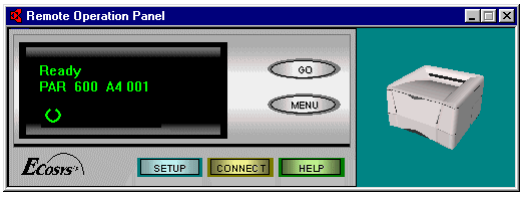
Note

We recommend that you leave the default settings for Host buffer mode and Host buffer size unchanged.

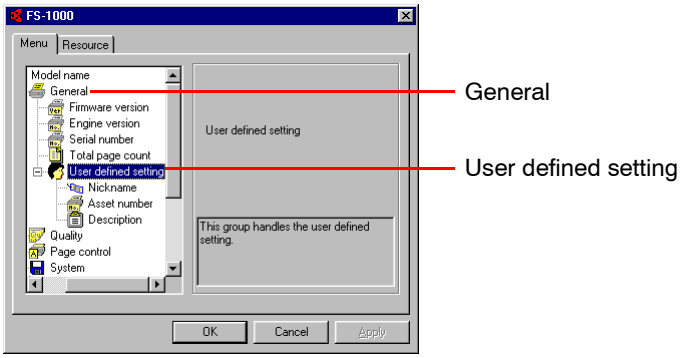
1.6.5 Adding a Name and Description to the Printer

You can add a name, asset number, and description to the printer. The asset number can only be defined when your printer is connected to a network, and is stored by the printer. The name and explanation are stored in the **Remote Operation Panel** utility.

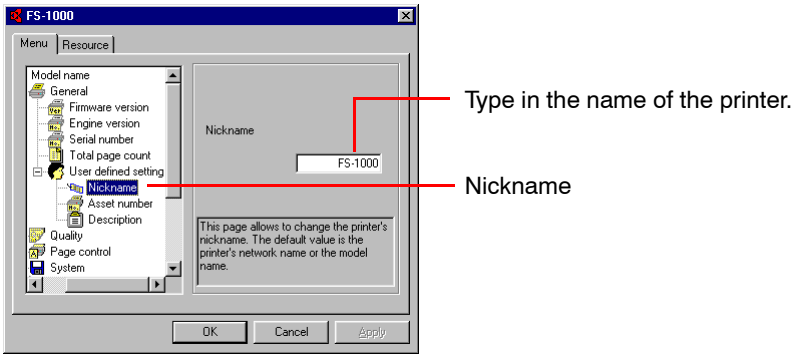
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Double click on **General** and then on **User defined setting**.



3 Click the item you want to set, and enter the text for that item in the text box on the right side of the screen. The example below shows the screen that appears when you click on **Nickname**.

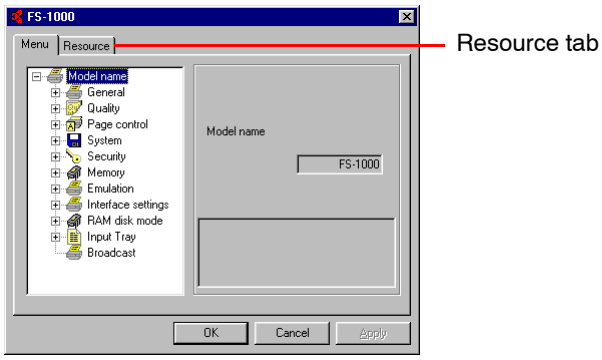


4 After making the settings, click the **OK** button to return to the start-up screen. The settings are changed.

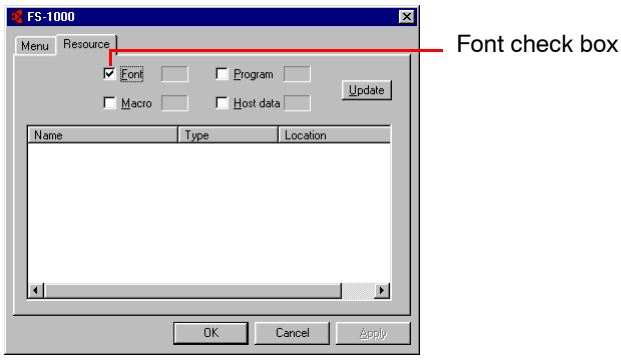
1.6.6 Displaying the Resource List

When the printer is connected to a network, you can display the printer's resource list, including fonts, programs, macros, and/or host data.

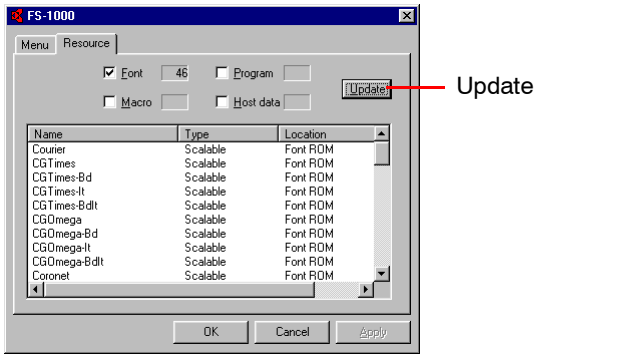
1 Click the **Resource** tab.



2 Click the check box that corresponds to the resource you want to display.



3 Click the **Update** button. A list of all items for that resource are displayed.



4 After confirming, click the **OK** button to return to the start-up screen.

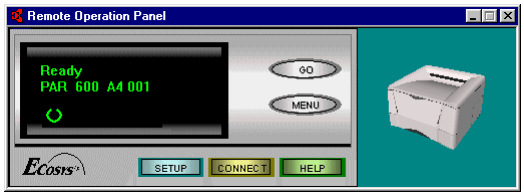
1.6.7 Sending PRESCRIBE 2e Commands to the Printer

You can send commands to the printer in Kyocera's PRESCRIBE 2e printer language by broadcasting. You can also use this menu to confirm the printer's internal settings.

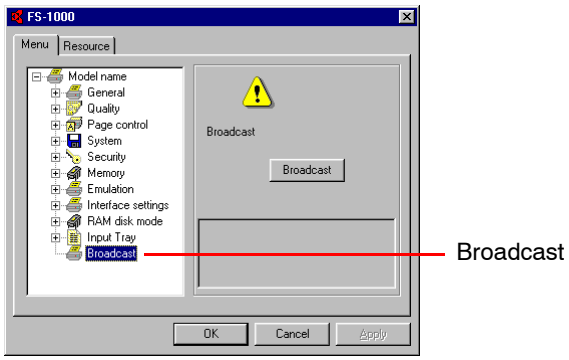
Note

For details on PRESCRIBE 2e commands and FRPO settings, refer to the *Programming Manual* provided on the CD-ROM supplied with the printer.

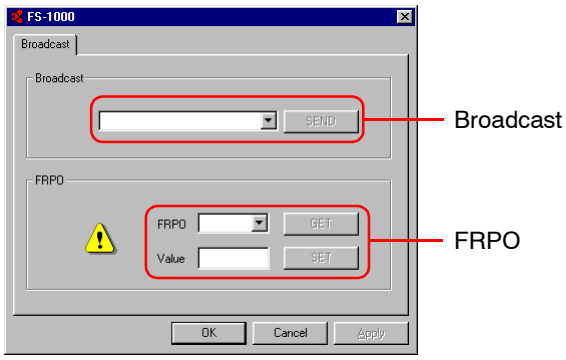
1 Click the **MENU** button on the start-up screen.



2 The **Menu** dialog box appears. Click **Broadcast**.



3 Click **Broadcast** to display the dialog box shown below.



Broadcast

To send PRESCRIBE 2e commands to the printer, enter the command in the **Broadcast** text box. The maximum length for a command sequence is 26 characters. Then click the **SEND** button to send the command to the printer.

FRPO

FRPO is a PRESCRIBE 2e command that permanently changes the printer's internal parameters. Each parameter is represented by two letters, such as R4 for default paper source, succeeded by FRPO, then followed by a value. For example, `FRPO R4, 1;` means that the default paper source (R4) is the printer's cassette (1).

To confirm the current value for an FRPO parameter:

1 Enter the parameter (for example R4) in **FRPO**.

2 Click on **GET**. The current value is shown in **Value**.

To change the value for an FRPO parameter:

1 Follow the above procedure to display the current value in **Value**.

2 Erase the current value and enter the new value. For example, to change the default paper source to the MP Tray in the above example, enter 0 instead of 1 in **Value**.

3 Click **SET**. The value is changed.

Chapter 2 Printer Driver

This chapter describes how to perform basic print operations using the printer driver, such as setting the paper size and selecting a paper source.

About the printer driver
The *Kyocera Digital Library* CD-ROM supplied with this printer contains the printer drivers for Windows and Macintosh computers. By installing this printer driver on your computer, you can print from Windows and Macintosh applications.

This chapter explains the following topics:

- **Installing the Printer Driver for Windows 95/98**
- **Printing From Applications**

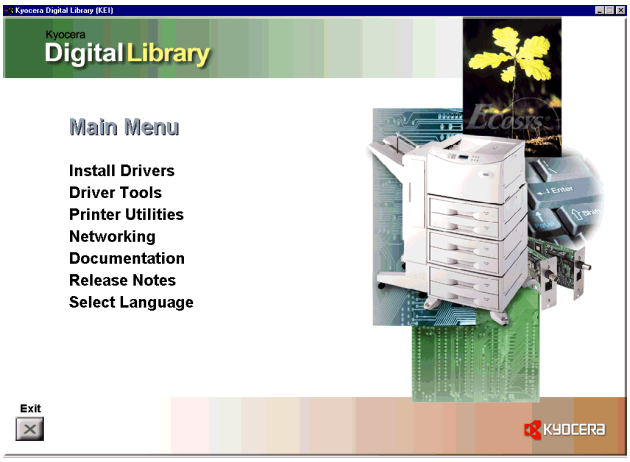
2.1 Installing the Printer Driver for Windows 95/98

When you insert the *Kyocera Digital Library* CD-ROM supplied with the printer into your computer, the setup screen is automatically displayed. To install the printer driver, follow the on-screen instructions.

2.1.1 Installing the Printer Driver

Insert the *Kyocera Digital Library* CD-ROM supplied with the printer into the CD-ROM drive of the computer.

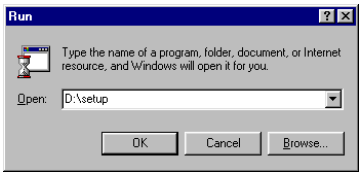
After a few moments, the *Kyocera Digital Library* main menu appears. Click on **Install Drivers** to start dirver installation.



If this screen does not appear, click the Windows **Start** button and select **Run**.

Enter the following:

```
[CD drive letter]:\setup
```



Click the **OK** button. After a few moments, the *Kyocera Digital Library* main menu appears.

2.2 Printing From Applications

This section uses a document created using Microsoft Word as an example of how to print from applications.

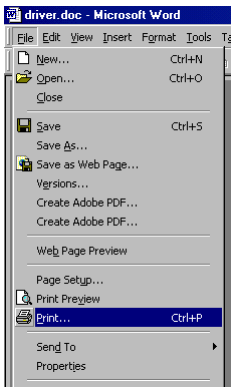
Note

When feeding from the paper cassette, do not insert paper into the MP tray. Because the MP tray default setting is set to first mode (priority printing from the MP tray), if there is paper inserted in the MP tray, the first paper will always feed from there. To change the MP tray's first mode setting, send the PRESCRIBE 2e FRPO T0 command to the printer from the Remote Operation Panel utility. (See section *1.6.7*.) For FRPO commands, refer to the *Programming Manual* provided on the CD-ROM supplied with the printer.

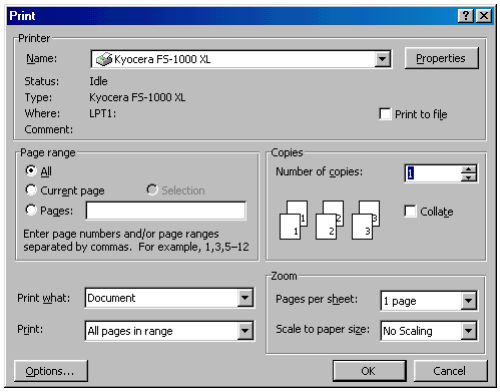
1. Set paper of the size specified for the document in the application into the printer's paper cassette. (For details on how to set paper sizes, refer to the ***Installation Manual***.)

2. Set the paper size inserted into the paper cassette in the **Remote Operation Panel** utility (see page *1-18*). If paper size settings are not the same, print may be incorrectly positioned.

3. Create the print document, then click **File** from the menu bar. Next, click **Print**, and the **Print** dialog box will appear.

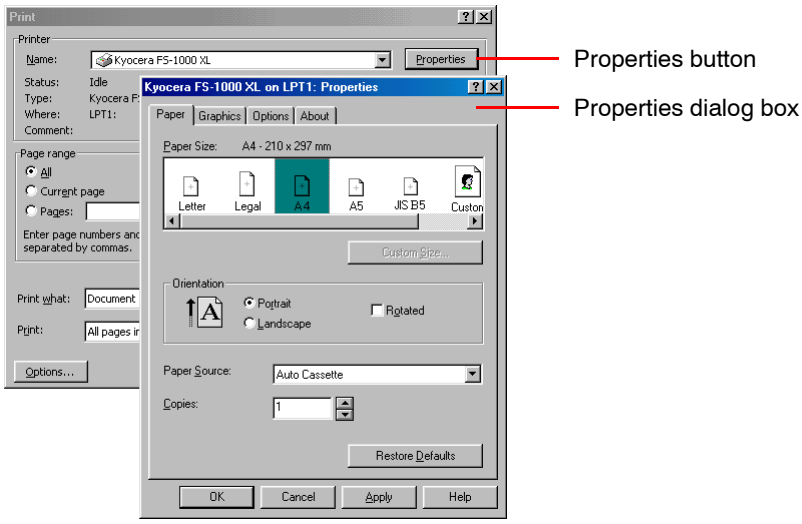


Application drop-down menu

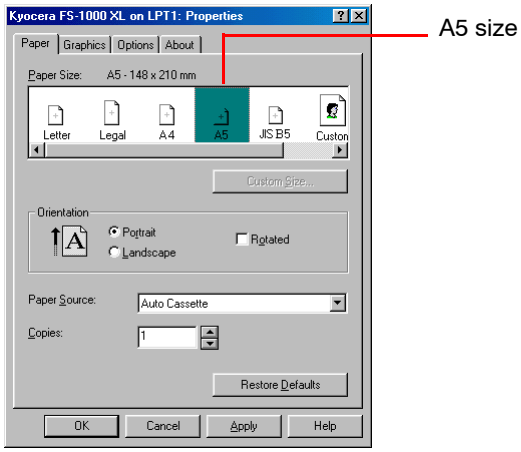


Print dialog box

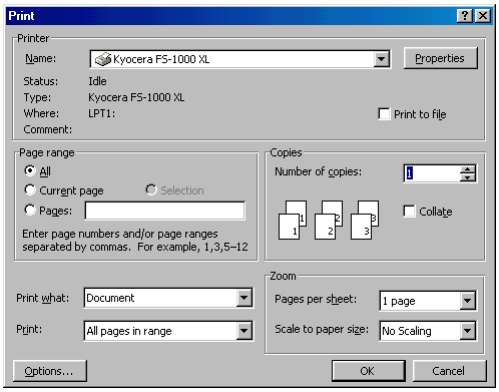
4 Click the **Properties** button in the **Print** dialog box. The **Properties** dialog box is displayed.



5 Click the paper size icon in the **Paper Size** list box so that it is greyed, then click the **OK** button. A5 was selected for the following example.



6 Once you finish making paper size settings, the **Print** dialog box is displayed again. Click the **OK** button to start printing.



Note

Settings made from applications are not saved when the application is closed, and default settings are restored when the application is opened the next time. To change the printer driver default settings, make printer settings from Windows.

2.2.1 Feeding from the MP tray

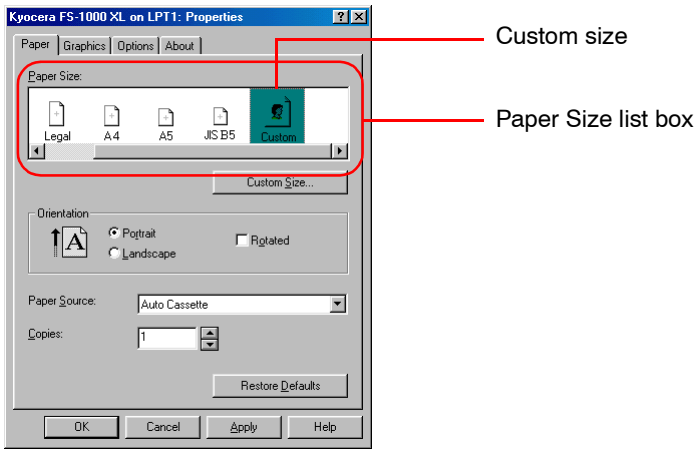
First mode (priority printing) is set in the MP tray default settings.

To change the MP tray's first mode setting, send the PRESCRIBE 2e FRPO T0 command (`!R! FRPO T0, 0; EXIT;`) to the printer from the **Remote Operation Panel** utility (see section ***1.6.7***). For FRPO commands, refer to the ***Programming Manual*** provided on the CD-ROM supplied with the printer.

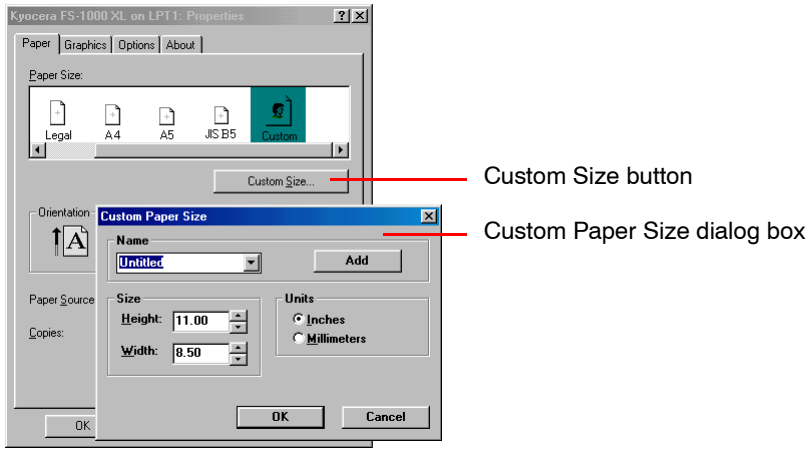
2.2.2 Custom Size Settings

This printer can feed non-standard paper sizes. The paper cassette can accommodate sizes ranging from 148 to 216 mm in width and 216 to 297 mm in length, and the MP tray can accommodate sizes ranging from 80 to 216 mm in width and 148 to 297 mm in length. The procedure for setting custom sizes from the printer driver is explained below.

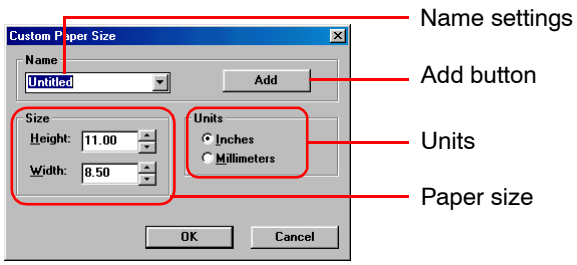
1 Display the printer driver's **Properties** dialog box from the application software, then click **Custom** from the **Paper Size** list box so that it becomes greyed.



2 Click the **Custom Size** button to display the **Custom Paper Size** dialog box.



3 Enter a name for your custom size and click the **Add** button.



4 Select the unit or measurement, **Inches** and **Millimeters**.

5 Enter the height and width of the custom size in **Size**.

6 Click the **OK** button. The **Print** dialog box is displayed again. Click the **OK** button to start printing.

Chapter 3 Maintenance

This chapter explains how to replace the toner container and how to clean parts such as the registration roller and charger wire.

This chapter explains the following topics:

- **Toner Container Replacement**
- **Cleaning**

3.1 Toner Container Replacement

When the printer runs low on toner, the (toner) indicator flashes on the operator panel. Be sure to promptly replace the toner container and clean the inside of the printer when this message appears.

If the printer stops printing while the (toner) indicator is lit, replace the toner container to continue printing.

3.1.1 Toner Container Replacement Interval

Assuming an average toner coverage of 5%, with Ecoprint mode turned off the toner container will need replacing approximately once every 6,000* printed copies.

* In the case of a new printer in which a toner kit has been installed for the first time, the number of copies that can be printed will be approximately 3,000.

Toner Kit to be Used

Name: TK-17

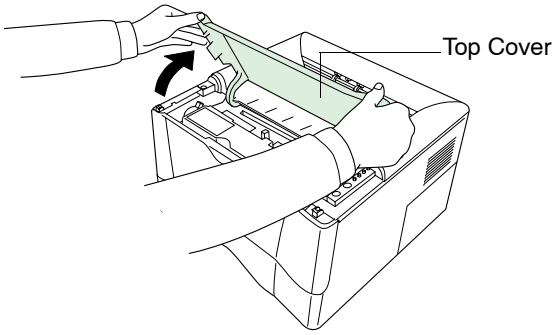
Description: Toner container
Wiper cloth
Plastic bag
User's manual
(The kit supplied with the printer only contains the toner container and wiper cloth.)

Note

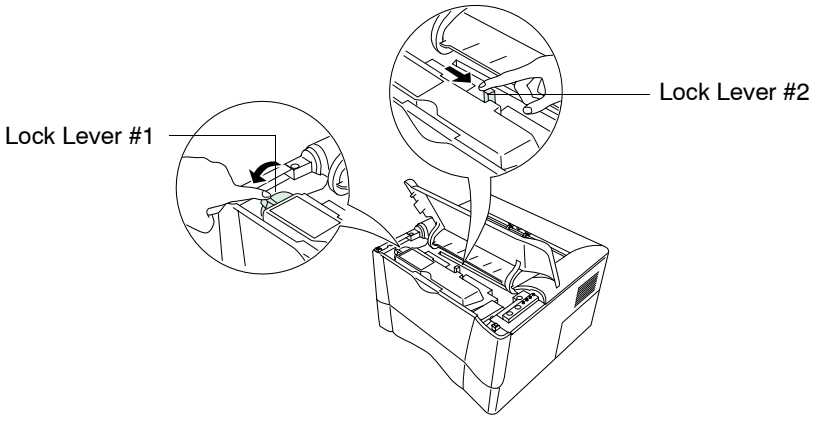
- **Be sure to distance items such as floppy disks during toner container replacement.**
- **Be sure to clean the inside of the printer when replacing the toner container. For details, see *3.2 Cleaning*.**
- **Use of original Kyocera toner kits is highly recommended to prevent printer trouble and ensure the long life of the printer.**

3.1.2 Replenishing Toner

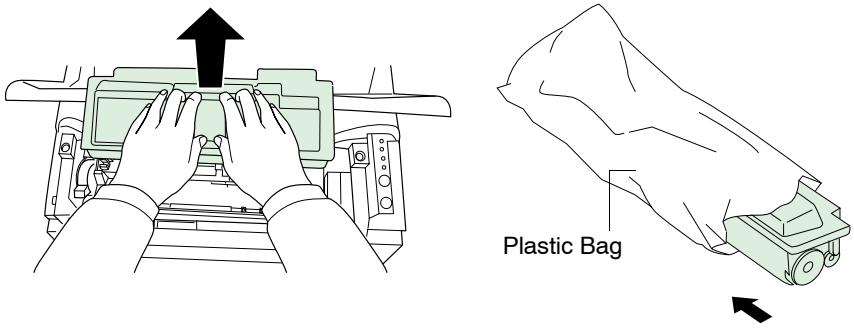
1 Open the printer's top cover.



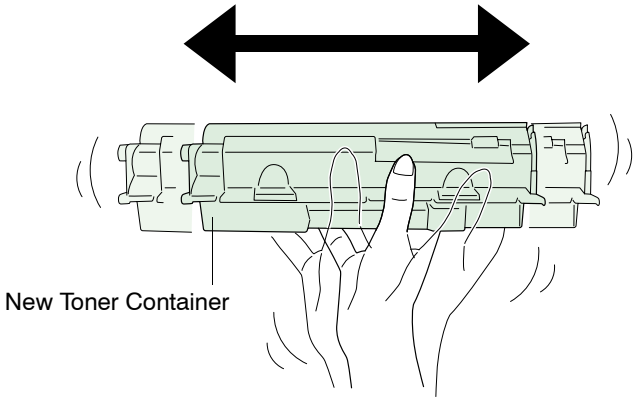
2 Pull lock lever #1 to the release (**UNLOCK**) position, then pull lock lever #2 to the release (right) position.



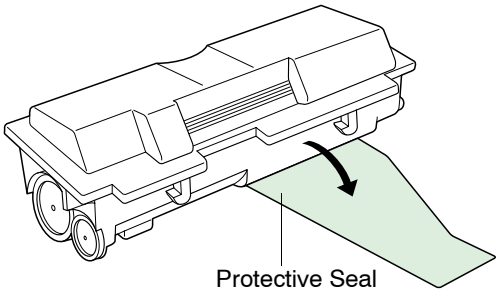
3 Gently remove the old toner container. Put it in the supplied plastic bag and dispose of it.



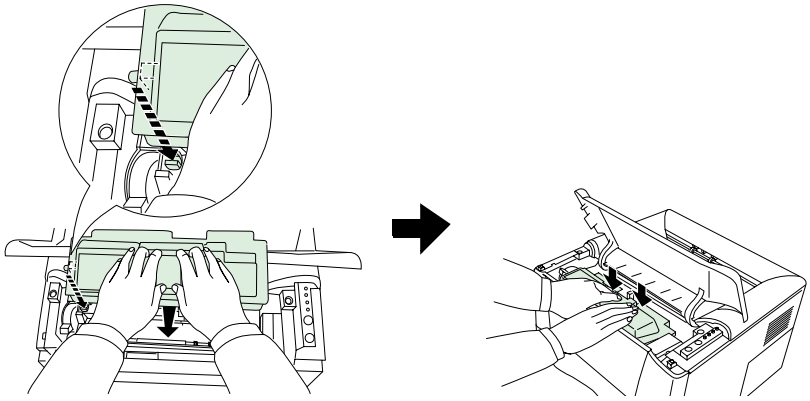
4 Take the toner container from the bag. Hold it with the protective seal (orange-colored) facing up. Shake the toner container horizontally at least 5 times. This ensures that the toner is evenly distributed inside.



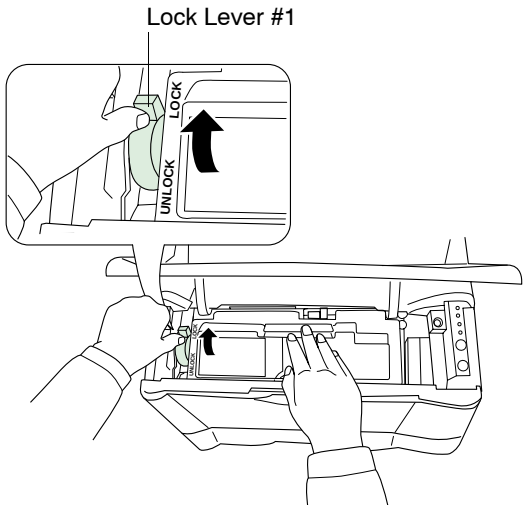
5 Carefully remove the protective seal (orange-colored).



6 Install the new toner container in the printer. Push firmly on the top of the container at the positions marked **PUSH HERE** until you hear it click in place.



7 While pushing down on the toner container, push lock lever #1 to the lock (**LOCK**) position. (Lock lever #2 is automatically locked.)



Note

If the toner low indication flashes or remains lit after installing the new toner container, take the toner container out once, shake it well, then install again.

3.2 Cleaning

To avoid print quality problems, the interior of the printer must be cleaned with every toner container replacement.

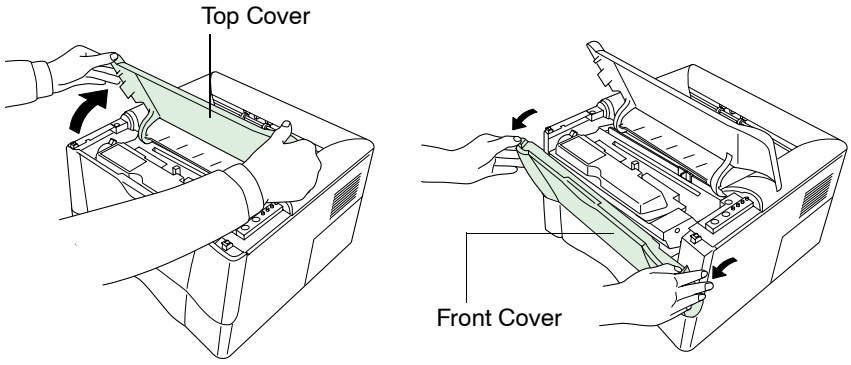
Note

Cleaning should be done from time to time to avoid print quality problems.

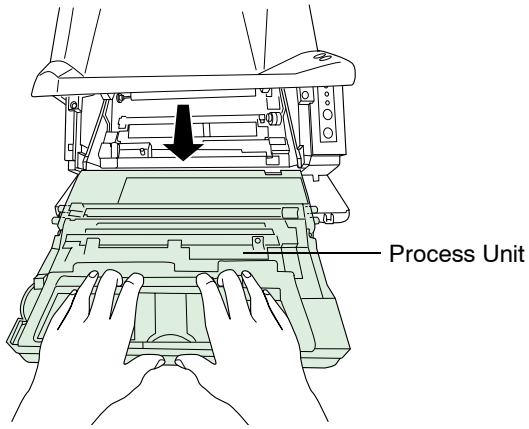
3.2.1 Printer Interior

To avoid print quality problems due to paper dust and debris, clean the interior of the printer in the following manner.

1 Open the printer's top and front covers.



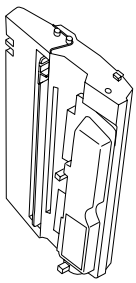
2 Lift the process unit together with the toner container out of the printer. **The drum in the process unit is sensitive to light. Never expose the drum even to normal office lighting (500 lux) for more than five minutes.**



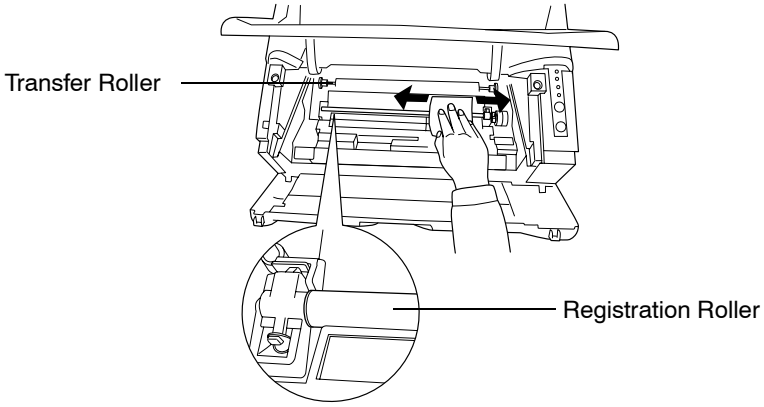
Note

Never stand the process unit on end.

NO



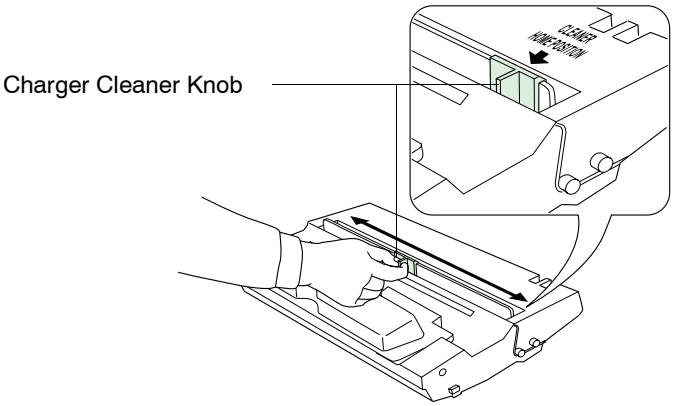
3 Use the supplied wiper cloth to clean dust and dirt away from the registration roller (metal).



Note

While cleaning, be careful to avoid touching the transfer roller (the black roller).

4 Slide the charger cleaner knob (green-colored) back and forth 2 to 3 times, then return it to its **CLEANER HOME POSITION** ⬇.

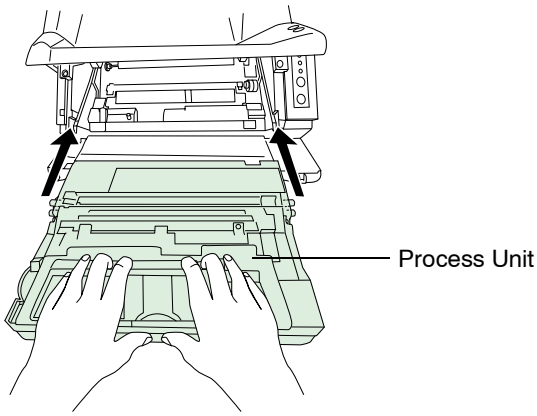


After cleaning, make sure you restore the charger cleaner to its home position.

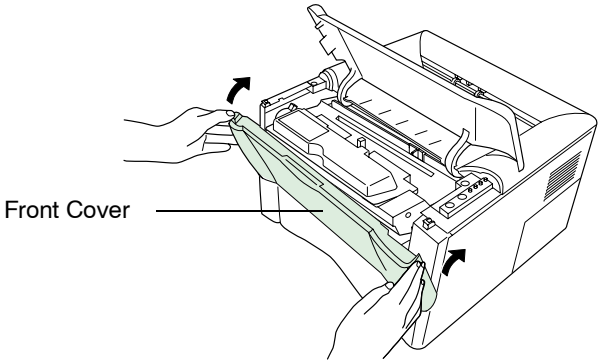
Note

If the charger cleaner knob is not restored to its home position (marked CLEANER HOME POSITION ⬇), a black band will print along the length of the page the next time you use the printer.

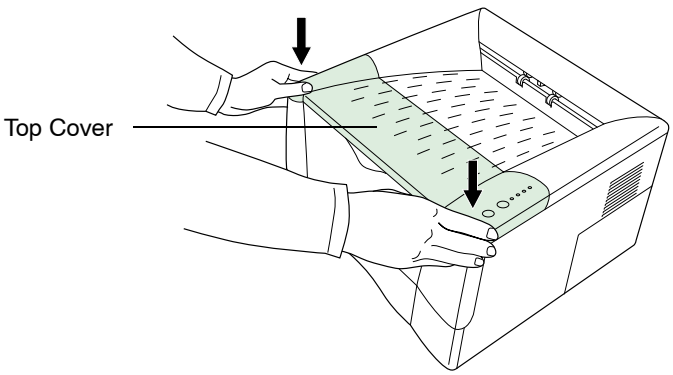
5 After cleaning is done, put the process unit back in the printer. To do so, carefully align the guides at both ends of the process unit with the slots in the printer.



6 Close the front cover.



7 Close the top cover by pressing down on the front left and right corners of the top cover.



Chapter 4 Troubleshooting

This chapter explains how to handle printer problems that may occur. If a problem cannot be corrected, contact your Kyocera dealer.

This chapter explains the following topics:

- **General Guide**
- **Print Quality Problems**
- **Indicators**
- **Correcting a Paper Jam**

4.1 General Guide

There are quite a few printer problems which may be corrected by the user. This section explains how to correct these problems.

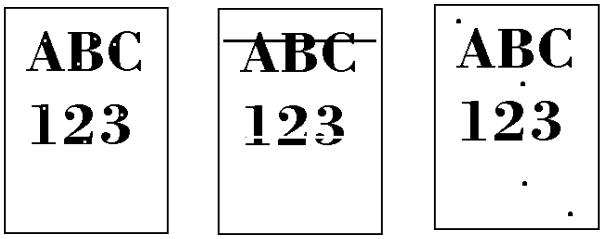
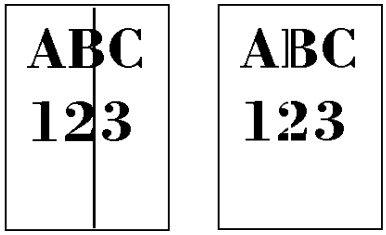
If some kind of printer problem should occur, check the following before concluding the printer is broken.

Symptom	Check Items		Corrective Action
The printer will not print from the computer.	Check the ↻ indicator.	Off	Look through the items below and check anything that seems appropriate.
		Flashing	Rapid flashing: An error has occurred. For details on error warnings and remedies, see section ***4.3 Indicators***. Flickering: The printer is offline. Pressing the ◎ key switches the printer to online status.
		Lit	See the appropriate item below.
	Check if status page can be printed.	Status page can be printed.	There may be a problem with the computer's connection to the network. Also, look through the items below and check anything that seems relevant.
Print quality is not good.			See section ***4.2 Print Quality Problems***.
Paper is jammed.			See section ***4.4 Correcting a Paper Jam***.
Nothing lights on the operator panel even when power is turned on and the fan makes no noise.	Check that the power cord is properly plugged into the power outlet.		Turn off the printer's power, plug in the power cord securely, and try turning on the printer's power again.
	Check that the power switch is really in the ON (|) position.		
The printer prints a status page, but data from the computer is not being printed normally.	Check the interface cable.		Connect both ends of the interface cable securely. Try replacing the printer cable. For details on the parallel interface for this printer, see ***Appendix C***.
	Check program files and application software.		Try printing another file or using another print command. If the problem occurs only with a specific file or application, check the printer settings for that application.

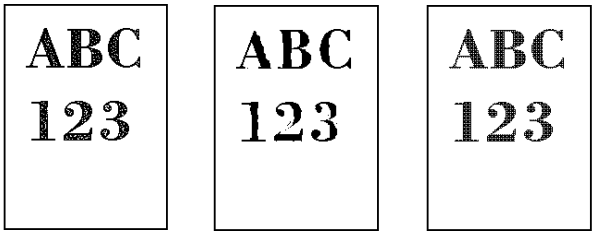
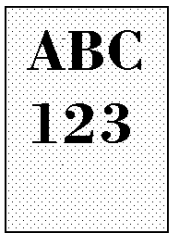
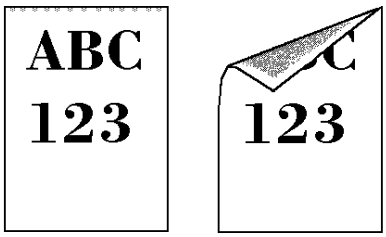
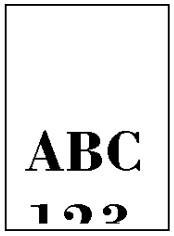
If you still cannot correct a printer problem even after checking the above, please contact your Kyocera dealer.

4.2 Print Quality Problems

As the following table shows, there are many possible causes of print quality problems, such as blank output as. The troubleshooting procedure for each type of problem is explained below. If you still can not solve the problem, contact your Kyocera dealer.

Printed Results	Corrective Action
All-black printout	**Contact your Kyocera dealer.**
Dropouts, horizontal streaks, stray dots 	**Clean the charger wire.** Open the printer's top and front covers. Remove the process unit from the printer and slide the charger knob back and forth to clean the charger wire. (See ***Chapter 3***)
Black or white vertical streaks 	**Check the operator panel.** When the (toner) indicator is flashes, install a new toner kit. Clean the printer after replacement. (See ***Chapter 3***)
	Clean the charger wire. Open the printer's top and front covers. Remove the process unit from the printer and slide the charger knob back and forth to clean the charger wire. (See ***Chapter 3***)
	Check the position of the charger cleaner knob Open the printer's top and front covers. Remove the process unit from the printer. Make sure the charger cleaner knob is restored to its home position. (See ***Chapter 3***)

(Continued on next page)

Printed Results	Corrective Action
Faint or blurred printing 	**Check the Ecoprint setting.** (See ***Chapter 1***) When this setting is On, switch it to Off on the **Remote Operation Panel**. (See ***Chapter 1***)
	Confirm the (toner) indicator. If the (toner) indicator flashes, install a new toner kit. (See ***Chapter 3***)
	Clean the charger wire. Open the printer's top and front covers. Remove the process unit from the printer and slide the charger knob back and forth to clean the charger wire. (See ***Chapter 3***)
	Try setting the thin paper mode. Set the paper type to Thin in the **Remote Operation Panel** utility. (See ***Chapter 1***)
Grey background. 	**Check the operator panel.** When the (toner) indicator is flashes, install a new toner kit. (See ***Chapter 3***)
	Check the process unit. Open the printer's top cover and front cover, then check that the process unit is properly installed.
Dirt on the top edge or back of the paper 	**Check the transfer roller.** Open the printer's top and front covers. Remove the process unit from the printer and check whether the transfer roller is dirty. If so, print several pages to eliminate the dirt.
	Check the registration roller. Open the printer's top and front covers. Remove the process unit from the printer and check whether the registration roller is soiled with toner. If so, wipe it clean using the supplied wiper cloth.
Characters out of position. 	**Check the file or program.** Check whether the problem is being caused by a PRESCRIBE 2e command error. If the problem occurs only with a specific file or program, the most likely cause is an error in a parameter to a command or command syntax.
	Check the paper size setting. Check that the paper size set in the paper source and the paper size set on the **Remote Operation Panel** are the same. (See section ***1.4.4***)

4.3 Indicators

There are four indicators on the printer's operator panel. These light, flash, and turn off in combination to indicate the printer's current status. This section explains the indicators on the operator panel and the appropriate corrective action to take in each case.

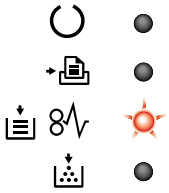
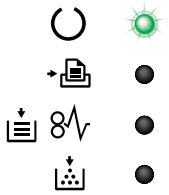
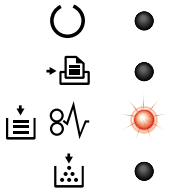
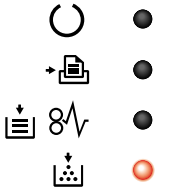
Indicator displays can be classified into three categories: maintenance, errors, and normal. In the following table, indicators are shown to be lit, flashing, or off. Further, flashing is divided into two speeds, fast and slow.

Red/Green	Lit
Red/Green	Fast Flashing
Red/Green	Slow flashing
Grey	Off

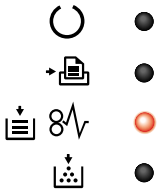
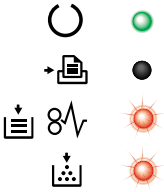
By using the **Remote Operation Panel** utility, you can monitor the printer's status from the computer. When a printer error occurs, the error message is displayed on the computer's screen. The **Remote Operation Panel**'s display is described in the following tables.

4.3.1 Maintenance Messages

The following table lists error messages that can be dealt with by the user. Read the explanations carefully.

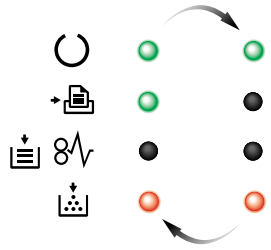
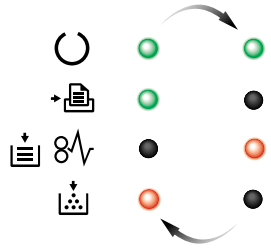
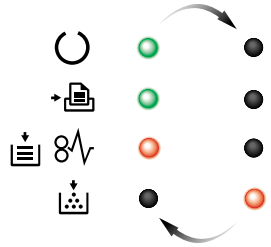
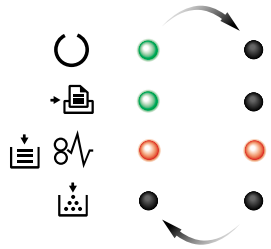
Indicator	Remote Operation Panel display	Corrective Action
	Add paper <paper source> <size>	**The paper has run out. Add paper to the paper cassette or MP tray.** The paper source and paper size are displayed in the **Remote Operation Panel**. Press the ◎ key to switch, the paper source between the MP tray, the paper cassette, and the paper feeder (optional) in that order.
		The paper cassette is not closed securely. Close the paper cassette properly.
	Load MP tray <paper size>	**The cassette paper size and data paper size are not the same.** The printer feeds from the MP Tray when the page in the paper cassette is a different size than that specified in the print data. Set paper of the size specified in the print data into the MP tray, then press the ◎ key to resume printing. When you want to feed from a source other than the MP tray, make sure there is no paper in the MP tray, then press the ◎ key to switch the paper source. The printer prints on the paper size set in that particular paper source.
	Paper jam	**Open the printer and clear the paper jam.** For details on how to clear paper jams, see section *4.4* .
	Replace Toner TK-17	**There is no more toner in the toner container.** The printer has stopped because there is no more toner. Replace with a new toner kit. After replacing, be sure to clean the printer. (See ***Chapter 4***)

(Continued on next page)

Indicator	Remote Operation Panel display	Corrective Action
	Toner low TK-17	**There is not enough toner inside the toner container.** Promptly replace with a new toner as the printer will stop printing before long. Clean the printer after replacement. (See ***Chapter 4***)
	Top cover Open	**The top or front cover is open.** Close the cover properly.
	Warning Waste toner bottle	**The waste toner reservoir is almost full.** The waste toner reservoir will become full and the printer will stop printing.

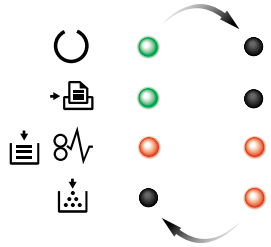
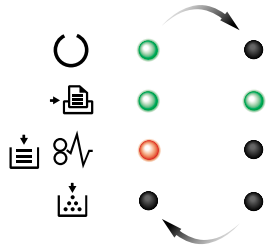
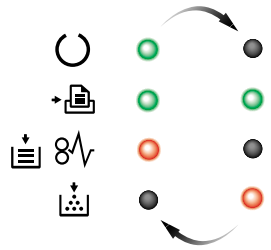
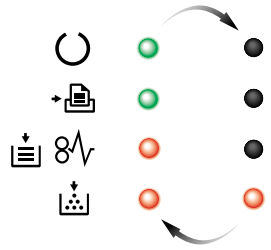
4.3.2 Errors Requiring Service Personnel Attention

When the following errors occur, turn off your printer, remove the plug from the AC outlet, and contact your Kyocera dealer. The indicators are shown in two different states, according to the way they alternate.

Indicator	Remote Operation Panel display	Corrective Action
	Call service personD9:0123456	**The waste toner reservoir is full (D9 error)** Turn off the printer's power and remove the process unit from the printer. Gently shake the process unit horizontally a few times, then reinstall it into the printer. Turn on the printer's power. If this error message does not disappear, contact your Kyocera dealer (less than 100,000 pages printing).
	Call service personDA:0123456	**The waste toner reservoir is full (DA error)** Same as above (100,000 pages printing or more).
	Call service personE1:0123456	**Main motor error (E1 error)** Contact your Kyocera dealer.
	Call service personE2:0123456	**Scanner motor error (E2 error)** Contact your Kyocera dealer.

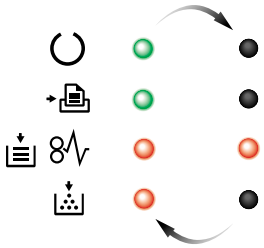
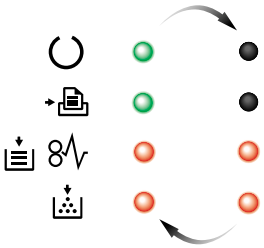
0123456: Total number of pages printed.

(Continued on next page)

Indicator	Remote Operation Panel display	Corrective Action
	`Call service personE3:0123456`	**Scanner pin-photo error (E3 error)** Contact your Kyocera dealer.
	`Call service personE4:0123456`	**Fuser error (E4 error)** Contact your Kyocera dealer.
	`Call service personE5:0123456`	**Eraser error (E5 error)** Contact your Kyocera dealer.
	`Call service personF1:0123456`	**Controller check sum error (F1 error)** Contact your Kyocera dealer.

`0123456`: Total number of pages printed.

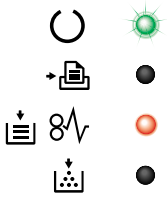
(Continued on next page)

Indicator	Remote Operation Panel display	Corrective Action
	Call service personF2:0123456	**Controller RAM read/write error (F2 error)** Contact your Kyocera dealer.
	Call service personF3:0123456	**Controller system error (F3 error)** Contact your Kyocera dealer.

0123456: Total number of pages printed.

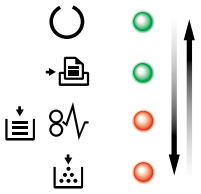
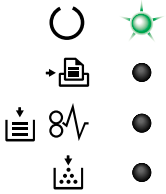
4.3.3 Error Messages

With the following errors, printing continues when you press the printer's key. You can confirm these errors by printing a status page. (See pages *1-4* and *1-5*.)

Indicator	Remote Operation Panel display	Corrective Action
	KPDL Error Press GO	**Current print processing cannot continue. (Only occurs if the optional KPDL2 Upgrade kit [PK-6] is installed on your printer.)** Press the key to resume printing. You can abandon printing by pressing the key.
	Memory overflow Press GO	**Printing cannot continue because there is not enough memory.** Try adding more memory. Press the key to resume printing. You can abandon printing by pressing the key.
	Print overrun Press GO	**Current print processing cannot continue due to complex data.** The data transferred to the printer was too complex to print on a page. Press the key to print data as far as it was stored. You can abandon printing by the key. Note: To release the page protect mode, send the following command to the printer from the **Remote Operation Panel** after this error occurs: `!R! FRPO R5, 1; EXIT;`
	RAM DISK err ## Press GO	**Check the error code displayed in ## and refer to the appropriate description below.** 01: Abnormal format. Try turning the power off and on again. 02: RAM disk mode is Off. Turn RAM disk mode On. 03: Cannot write to the disk system because it is write protected. Remove the write protection. 04: No disk space. Clean up files. 05: Specified file not on disk. 06: No memory for use by disk system. Expand printer memory. 10: Cannot format disk because host data is spooled there. Format the disk after Ready is displayed. 98: Unable to read files during sorting (file does not exist, or is corrupted).

4.3.4 Normal Indicator Display

The following displays appear during normal printer operation.

Indicator	Remote Operation Panel display	Description
	Cancelling data	Data inside the printer is being canceled. The indicators light in sequence from the top, then go off in sequence from the bottom. This process is repeated twice.
	Please wait	The printer is warming up and is not ready to print. The indicators light in sequence twice from top to bottom.
	Processing	The printer is receiving data.
		The printer is processing data, or the printer is waiting for a code or command signalling that the job is finished.
	Ready	The printer is ready to print.
		The printer is offline. The printer stores but does not print received data.
	Sleeping	The printer is in sleep mode. The ○ indicator flashes at 5-second intervals and all other indicators go off. The printer wakes from Sleep mode whenever a key on the operator panel is pressed, the cover is opened or closed, or data is received. The printer then warms up and goes online. (You can set the amount of time before the printer enters sleep mode from the **Remote Operation Panel** utility.)

4.4 Correcting a Paper Jam

This section describes how to remove paper when it jams in the printer. The printer will stop whenever paper jams in the printer or paper is not fed from a paper cassette. The printer will go offline and (paper jam) indicator will light in the operator panel. When a jam occurs, check the points indicated in the following and clear the jam as indicated.

If paper jams occur frequently, try using a different type of paper, replace with paper from another ream, turn the stack of paper over, or turn the paper the other way around. Read the information in ***Chapter 5***. Also, look for tiny pieces of paper that may have been torn apart and overlooked when the jammed paper was removed.

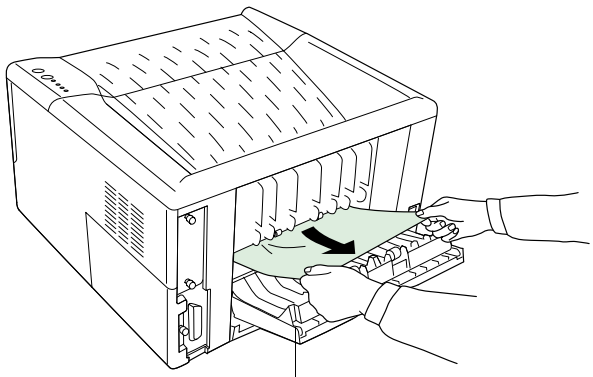
If you cannot solve the problem by changing the paper, there may be a problem with the printer. Call a service person.

Note

- **When pulling the paper, pull it gently so as not to tear it. Torn pieces of paper are difficult to remove and may be easily overlooked, deterring the jam recovery.**
- **Depending on where the jam occurred, the printer may or may not reprint the jammed page.**

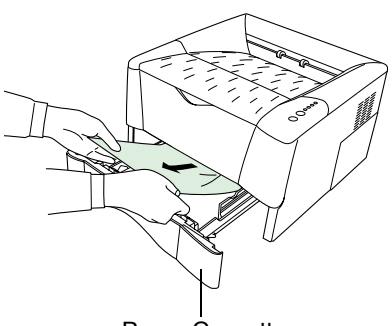
4.4.1 Jam at the Face-down and Face-up Trays

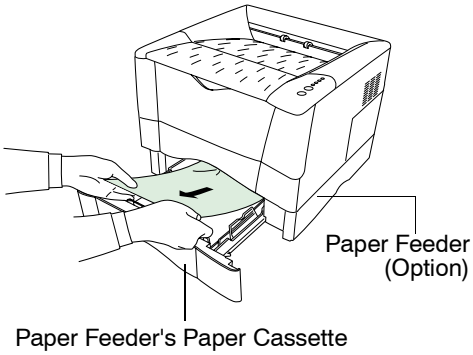
When paper is fed part way out into the tray, pull the paper out the rest of the way by hand. Open and close the printer's top cover to clear the error. The printer then automatically warms up and resumes printing.



4.4.2 Jam at the Paper Cassette

Pull out the paper cassette and remove any partially fed paper, then re-close the paper cassette. Open and close the printer's top cover to clear the error. The printer then automatically warms up and resumes printing. Follow the same steps for clearing the jammed paper at the option paper feeder's paper cassette.

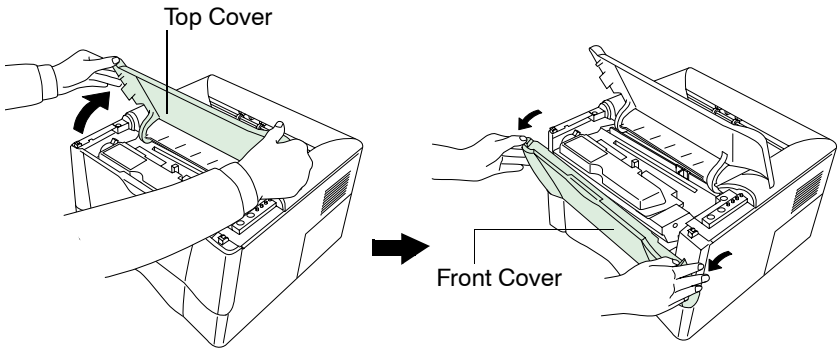




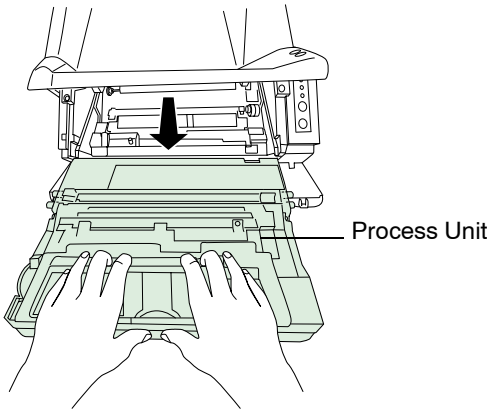
4.4.3 Jam Inside the Printer

When a paper jam occurs inside the printer, clear it using the following procedure.

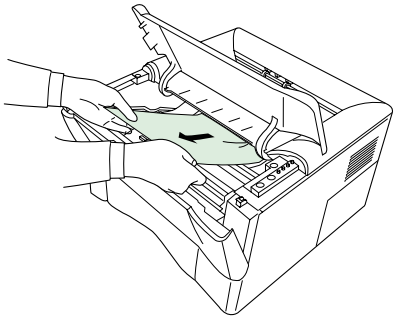
1 Open the printer's top and front covers.



2 Remove the process unit from the printer as shown in the figure.



3 Remove the jammed paper from the printer as shown in the figure.



Note

When the jammed paper appears to be pinched by rollers, pull it along the normal paper running direction.

4 After you have removed the jammed paper, put the process unit back into the printer.

5 Close the printer's front cover and top cover. The printer then automatically warms up and resumes printing.

Chapter 5 Paper Selection

This chapter explains the following topics:

- **General Guidelines**
- **Selecting the Right Paper**
- **Special Paper**

5.1 General Guidelines

The printer is designed to print on high-quality copier bond paper (the kind used in ordinary dry copier machines), but it can also accept a variety of other types of paper within the limits specified below.

Note

The manufacturer assumes no liability for problems that occur when paper not satisfying these requirements is used.

Selection of the right paper is important. Using the wrong paper can result in paper jams, misfeeding, curling, poor print quality, and paper waste, and in extreme cases can damage the printer. The guidelines given below will increase the productivity of your office by ensuring efficient, trouble-free printing and reducing wear and tear on the printer.

5.1.1 Paper Availability

Most types of paper are compatible with a variety of machines. Paper intended for xerographic copiers can also be used with the printer.

There are three general grades of paper: economy, standard, and premium. The most significant difference between grades is the ease with which they pass through the printer. This is affected by the smoothness, size, and moisture content of the paper, and the way in which the paper is cut. The higher the grade of paper you use, the less risk there will be of paper jams and other problems, and the higher the level of quality your printed output will reflect.

Differences between paper from different suppliers can also affect the printer's performance. A high-quality printer cannot produce high-quality results when the wrong paper is used. Low-priced paper is not economical in the long run if it causes printing problems.

Paper in each grade is available in a range of basis weights (defined later). The traditional standard weights are 16, 20, and 28 pounds (60 to 105 g/m^2).

5.1.2 Paper Specifications

The following table summarizes the basic paper specifications. Details are given on the following pages.

Table 5.1 Specifications

Item	Specification
Weight	Cassette : 60 to 105 g/m^2 (16 to 28 lb./ream) MP tray : 60 to 163 g/m^2 (16 to 43 lb./ream)
Thickness	0.086 to 0.110 mm (3.4 to 4.3 mils)
Dimensional accuracy	±0.7 mm (±0.0276 inches)
Squareness of corners	90° ±0.2°
Moisture content	4% to 6%
Direction of grain	Long grain
Pulp content	80% or more

5.2 Selecting the Right Paper

Laser printing is a process involving laser light, electrostatic discharge, toner, and heat. In addition, as the paper passes through the printer it undergoes considerable sliding, bending, and twisting motions. A high-quality printing paper matching the printer's requirements withstands all these stresses, enabling the printer to turn out clean, crisp printed copies consistently.

Remember that all paper is not the same. Some of the factors to consider when selecting paper for the printer are as follows:

Condition of the Paper

Avoid using paper that is bent at the edges, curled, dirty, torn, embossed, or contaminated with lint, clay, or paper shreds.

Use of paper in these conditions can lead to illegible printing, misfeeding, and paper jams, and can shorten the life of the printer. In particular, avoid using paper with a surface coating or other surface treatment. The paper should have as smooth and even a surface as possible.

Composition

Do not use paper that has been coated or surface-treated and contains plastic or carbon. The heat of fusing can cause such paper to give off harmful fumes.

Bond paper should contain at least 80% pulp. Not more than 20% of the total paper content should consist of cotton or other fibers.

Paper Size

Cassettes and an MP tray are available for the paper sizes listed in ***Table 5.2***. The dimensional tolerances are ±0.7 mm (±0.0276 inches) for the length and width. The angle at the corners must be 90° ±0.2°.

Table 5.2 Paper Sizes for Paper Feeding

Multi-Purpose tray	Size	Cassette or multi-purpose tray	Size
Monarch	3-7/8 × 7-1/2 inches	Legal (Not available with the MP tray)	8-1/2 × 14 inches
Business	4-1/8 × 9-1/2 inches	Letter	8-1/2 × 11 inches
International DL	11 × 22 cm	ISO A4	210 × 297 mm
International C5	16.2 × 22.9 cm	ISO A5	148 × 210 mm
International B5	17.6 × 25 cm	JIS B5	182 × 257 mm
Executive	7-1/4 × 10-1/2 inches	Custom	148 to 216 mm × 210 to 297 mm (5-13/16 to 8-1/2 inches × 8-1/4 to 14 inches)
Commercial 9	3-7/8 × 8-7/8 inches	Other sizes of paper can be fed manually. The minimum size paper for manual feed is 80 × 148 mm (3-1/8 × 5-13/16 inches), fed lengthwise. The maximum size is 216 × 356 mm (8-1/2 × 14 inches).	
Commercial 6-3/4	3-5/8 × 6-1/2 inches		
ISO A6	105 × 148 mm		
JIS B6	128 × 182 mm		
Hagaki	100 × 148 mm		
Ofuku-Hagaki	148 × 200 mm		

Smoothness

The paper should have a smooth, uncoated surface. Paper with a rough or sandy surface can cause voids in the printed output. Paper that is too smooth, however, can cause multiple feeding and fogging problems. (Fogging is a gray background effect.)

Basis Weight

Basis weight is the weight of a standard quantity of paper. In the traditional system the standard quantity is a ream consisting of 500 sheets measuring 17 × 22 inches each. In the metric system the standard quantity is 1 square meter.

Paper that is too light or too heavy can cause misfeeding, jams, and premature wear of the printer. Uneven paper weight can cause multiple feeds, print defects, poor toner fusing, blurring, and other print quality problems. The proper weight is 60 to 105 g/m^2 for the paper cassette, and 60 to 163 g/m^2 for the MP tray.

Thickness (Caliper)

Thick paper is referred to as high-caliper paper and thin paper as low-caliper paper. The paper used with the printer should be neither extremely thick nor extremely thin. If you are having problems with paper jams, multiple feeds, and faint printing, the paper you are using may be too thin. If you are having problems with paper jams and blurred printing the paper may be too thick. The proper thickness is 0.086 to 0.110 mm (3.4 to 4.3 mils).

Moisture Content

Moisture content is defined as the percent ratio of moisture to the dry mass of the paper. Moisture can affect the paper's appearance, feedability, curl, electrostatic properties, and toner fusing characteristics.

The moisture content of the paper varies with the relative humidity in the room. When the relative humidity is high and the paper absorbs moisture, the paper edges expand, becoming wavy in appearance. When the relative humidity is low and the paper loses moisture, the edges shrink and tighten, and print contrast may suffer.

Wavy or tight edges can cause misfeeding and alignment anomalies. The moisture content of the paper should be 4 to 6%.

To ensure the proper moisture content it is important to store the paper in a controlled environment. Some tips on moisture control are:

- Store paper in a cool, dry location.
- Keep the paper in its wrapping as long as possible. Rewrap paper that is not in use.
- Store paper in its original carton. Place a pallet etc. under the carton to separate it from the floor.
- After removing paper from storage, let it stand in the same room as the printer for 48 hours before use.
- Avoid leaving paper where it is exposed to heat, sunlight, or damp.

Paper Grain

When paper is manufactured, it is cut into sheets with the grain running parallel to the length (long grain) or parallel to the width (short grain). Short grain paper can cause feeding problems in the printer. All paper used in the printer should be long grain.

Other Paper Properties

Porosity: Refers to the density of the paper structure; that is, to how openly or compactly the fibers are bonded.

Stiffness: Limp paper can buckle inside the printer, while paper that is too stiff may bind. Either way the result is a paper jam.

Curl: Most paper has a natural tendency to curl in one direction. The paper should be loaded so that the natural curl is downward, to counteract the upward curl imparted by the printer. Printed sheets will then come out flat. Most paper also has a top and bottom surface. Loading instructions are usually given on the paper package.

Note

If the paper is considerably curled in one direction, e.g. when the paper was used to print on one side, try to roll the paper in the opposite direction to counteract the curl. Printed sheets will then come out flat.

Electrostatic properties: During the printing process the paper is electrostatically charged to attract the toner. The paper must be able to release this charge so that printed sheets do not cling together in the output tray.

Whiteness: The contrast of the printed page depends on the whiteness of the paper. Whiter paper provides a sharper, brighter appearance.

Quality control: Uneven sheet size, corners that are not square, ragged edges, welded (uncut) sheets, and crushed edges and corners can cause the printer to malfunction in various ways. A quality paper supplier should take considerable care to ensure that these problems do not occur.

Packaging: Paper should be packed in a sturdy carton to protect it from damage during transport. Quality paper obtained from a reputable supplier is usually properly packaged.

5.3 Special Paper

The following types of special paper can be used:

- Transparency (overhead projection film)
- Adhesive-backed label paper
- Envelopes
- Colored paper
- Preprinted paper
- Recycled paper

Use paper that is sold specifically for use with copiers (heat-fusing type). transparency, label paper, and envelopes should not be placed in the paper cassette; they must be fed from the MP tray and delivered in the face up stack.

Since the composition and quality of special paper vary considerably, special paper is more likely than white bond paper to give trouble during printing. No liability will be assumed if moisture and so forth given off during printing on special paper causes harm to the machine or operator.

Note

Before purchasing any type of special paper, test a sample on the printer and check that printing quality is satisfactory.

Specifications for each type of special paper are given below.

5.3.1 Transparency (overhead projection film)

Transparency must be able to withstand the heat of fusing during the printing process. It should satisfy the conditions in ***Table 5.3***.

Table 5.3 Transparency Specifications

Item	Specification
Tolerance of heat	Must tolerate at least 190°C (374°F)
Thickness	0.100 to 0.110 mm (3.9 to 4.3 mils)
Material	Polyester
Dimensional accuracy	±0.7 mm (±0.0276 in)
Squareness of corners	90° ± 0.2°

To avoid trouble, transparency must be delivered face-up.

If transparency jams frequently, pull the top of the sheet very gently as it leaves the printer.

5.3.2 Adhesive-Backed Labels

The basic rule for printing on adhesive labels is that the adhesive must never come into contact with any part of the printer. Adhesive paper sticking to the drum or rollers will damage the printer.

Label paper must be manually fed.

Label paper has a structure comprising three layers, as shown in ***Table 5.1***. The top sheet is printed on. The adhesive layer consists of pressure-sensitive adhesives. The carrier sheet (also called the linear or backing sheet) holds the labels until use. Due to the complexity of its composition, adhesive-backed label paper is particularly likely to give trouble in printing.

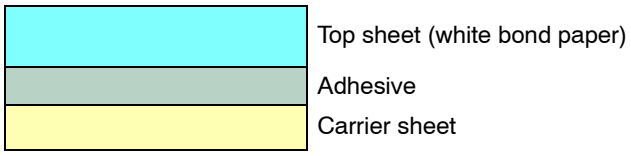


Figure 5.1 Adhesive-back label

Adhesive label paper must be entirely covered by its top sheet, with no spaces between the individual labels. Labels with spaces in between are apt to peel off, causing serious paper jam problems.

Some label paper is manufactured with an extra margin of top sheet around the edge. Do not remove the extra top sheet from the carrier sheet until after printing is finished.

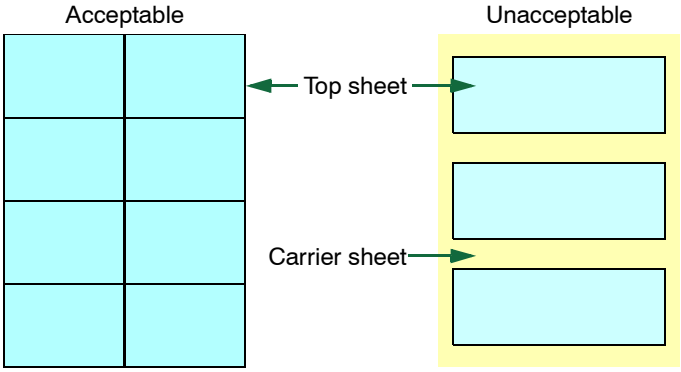


Figure 5.2 Label arrangement

Table 5.4 lists the specifications for adhesive label paper.

Table 5.4 Adhesive Label Specifications

Item	Specification
Weight of top sheet	44 to 74 g/m^2 (12 to 20 lb/ream)
Composite weight	104 to 151 g/m^2 (28 to 40 lb/ream)
Thickness of top sheet	0.086 to 0.107 mm (3.9 to 4.2 mils)
Composite thickness	0.115 to 0.145 mm (4.5 to 5.7 mils)
Moisture content	4 to 6% (composite)

Envelopes

The printer can print on envelopes using paper with a basis weight of 60 to 79 g/m^2 (16 to 21 lb/ream). Envelopes must be manually fed.

An envelope is a more complex object than a single sheet of paper. For this reason, it may not be possible to obtain consistent printing quality over the entire envelope surface.

Many envelopes have a diagonal grain orientation. (See *Paper Grain* above.) This orientation is more likely to wrinkle and crease on its way through the printer. Before purchasing envelopes for use with the printer, test a sample to verify the envelope's suitability.

Do not use envelopes that have an encapsulated liquid adhesive.

Avoid long printing runs consisting of envelopes only. Extensive envelope printing can cause premature printer wear.

To avoid jamming due to curled envelopes, do not leave more than approximately 10 printed envelopes stacked in the paper trays during multiple envelope printing.

Colored Paper

Colored paper should satisfy the same conditions as white bond paper, listed in *Table 5.1* on page *5-2*. In addition, the pigments used in the paper must be able to withstand the heat of fusing during the printing process (up to 200°C or 392°F).

Preprinted Paper

Preprinted paper should have a bond paper base. The preprinted ink must be able to withstand the heat of fusing during the printing process, and must not be affected by silicone oil.

Do not use paper with any kind of surface treatment, such as the type of paper commonly used for calendars.

Recycled Paper

Select recycled paper that meets the same specifications as the white bond paper (see *Table 5.1* on page *5-2*) except whiteness.

Note

Before purchasing recycled paper, test a sample on the printer and check that the printing quality is satisfactory.

Appendix A Fonts

This chapter describes the types of fonts you can use with the printer, including the printer's internal fonts.

This appendix explains the following topics:

- **Internal Fonts**
- **List of Fonts**

A.1 Internal Fonts

A font is a set of characters of a particular design. The design is referred to as a typeface. Several characteristics identify a font. These include the code set (for details on code sets, please read the ***Programming Manual*** provided on the CD-ROM supplied with the printer), spacing, pitch, height, style, stroke weight, and typeface family.

The printer comes with 45 preinstalled PCL compatible fonts and a line printer bitmap font. Fonts may also be downloaded to the printer's memory. These are referred to as downloadable or soft fonts. The printer accepts as many downloadable fonts as its user available memory permits.

A.2 List of Fonts

This section contains a full list of the printer's internal fonts. Fonts marked with an asterisk can only be used if the optional **KPDL2 Upgrade Kit (PK-6)** is installed on your printer.

A.2.1 Internal Scalable and Bitmap Fonts

Font number	Font samples
0	This is a sample of Courier font.
1	This is a sample of CGTimes font.
2	**This is a sample of CGTimes-Bd font.**
3	*This is a sample of CGTimes-It font.*
4	***This is a sample of CGTimes-BdIt font.***
5	This is a sample of CGOmega font.
6	**This is a sample of CGOmega-Bd font.**
7	*This is a sample of CGOmega-It font.*
8	***This is a sample of CGOmega-BdIt font.***
9	*This is a sample of Coronet font.*
10	**This is a sample of Clarendon-Cd font.**
11	This is a sample of Univers-Md font.
12	**This is a sample of Univers-Bd font.**
13	*This is a sample of Univers-MdIt font.*
14	***This is a sample of Univers-BdIt font.***
15	This is a sample of Univers-MdCd font.
16	**This is a sample of Univers-BdCd font.**
17	*This is a sample of Univers-MdCdIt font.*
18	***This is a sample of Univers-BdCdIt font.***
19	This is a sample of AntiqueOlive font.
20	**This is a sample of AntiqueOlive-Bd font.**
21	*This is a sample of AntiqueOlive-It font.*
22	This is a sample of GaramondAntiqua font.
23	This is a sample of Garamond-Hlb font.
24	*This is a sample of Garamond-Krsv font.*
25	*This is a sample of Garamond-HlbKrsv font.*
26	This is a sample of Marigold font.
27	This is a sample of Albertus-Md font.
28	**This is a sample of Albertus-ExBd font.**
29	This is a sample of Arial font.
30	**This is a sample of Arial-Bd font.**

Font number	Font samples
31	*This is a sample of Arial-It font.*
32	***This is a sample of Arial-BdIt font.***
33	This is a sample of TimesNewRoman font.
34	**This is a sample of TimesNewRoman-Bd font.**
35	*This is a sample of TimesNewRoman-It font.*
36	***This is a sample of TimesNewRoman-BdIt font.***
37	* This is a sample of Helvetica font.
38	* **This is a sample of Helvetica-Bd font.**
39	* *This is a sample of Helvetica-Ob font.*
40	* ***This is a sample of Helvetica-BdOb font.***
41	* This is a sample of Helvetica-Nr font.
42	* **This is a sample of Helvetica-NrBd font.**
43	* *This is a sample of Helvetica-NrOb font.*
44	* ***This is a sample of Helvetica-NrBdOb font.***
45	* This is a sample of Palatino font.
46	* **This is a sample of Palatino-Bd font.**
47	* *This is a sample of Palatino-It font.*
48	* ***This is a sample of Palatino-BdIt font.***
49	* This is a sample of ITCAvantGardeGothic-Bk font.
50	* **This is a sample of ITCAvantGardeGothic-Dm font.**
51	* *This is a sample of ITCAvantGardeGothic-BkOb font.*
52	* ***This is a sample of ITCAvantGardeGothic-DmOb font.***
53	* This is a sample of ITCBookman-Lt font.
54	* **This is a sample of ITCBookman-Dm font.**
55	* *This is a sample of ITCBookman-LtIt font.*
56	* ***This is a sample of ITCBookman-DmIt font.***
57	* This is a sample of NewCenturySchoolbook-Rom font.
58	* **This is a sample of NewCenturySchoolbook-Bd font.**
59	* *This is a sample of NewCenturySchoolbook-It font.*
60	* ***This is a sample of NewCenturySchoolbook-BdIt font.***
61	* This is a sample of Times-Rom font.
62	* **This is a sample of Times-Bd font.**
63	* *This is a sample of Times-It font.*
64	* ***This is a sample of Times-BdIt font.***
65	* *This is a sample of ITCZapfChancery-MdIt font.*
66	Τηισ ισ α σαμπλε οφ Σψμβολ φοντ. (Symbol)
67	* Τηισ ισ α σαμπλε οφ ΣψμβολΠΣ φοντ. (SymbolPS)
68	❄♒♓♦ ♓♦ ♋ ♦♋❍❑●♏ ❑➚ ♁♓■♑♌♓■♑♦ ➚❑■⧫ (Wingdings)
69	* ✶❋❇▲ ❇▲ ❁ ▲❁❍❒●❄ ❑❄ ☆✶✣✺❁❒❄✤❇■✳✪❁▼▲ ❄❑ (ITCZapfDingbats)

Font number	Font samples
70	**This is a sample of Courier-Bd font.**
71	*This is a sample of Courier-It font.*
72	***This is a sample of Courier-BdIt font.***
73	This is a sample of LetterGothic font.
74	This is a sample of LetterGothic-Bd font.
75	*This is a sample of LetterGothic-It font.*
76	* This is a sample of CourierPS font.
77	* **This is a sample of CourierPS-Bd font.**
78	* *This is a sample of CourierPS-Ob font.*
79	* ***This is a sample of CourierPS-BdOb font.***
80	This is a sample of LinePrinterBM8.5-Roman font.

Appendix B Expansion Memory Installation

This appendix explains how to expand the printer's memory. Expanded printer memory enables you to print more complex pages, download more fonts, and define more macros.

This appendix begins by explaining how to install a DIMM (dual in-line memory module) on the main circuit board.

The FS-1000 comes supplied with 4 MB of memory installed. A slot is provided for expanding the memory in your printer so that more complex printing can be done, as well as increasing the printing speed. By installing optional DIMM into your printer, the memory in the FS-1000 can be increased to a maximum of 132 MB.

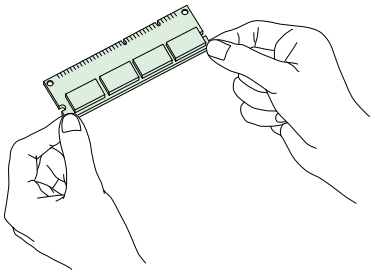
Note

- **The expansion memory should be installed only by a Kyocera authorized dealer or Kyocera certified technician. Kyocera shall not be liable for damage due to improper installation of the expansion memory.**
- **The following instructions are intended for the technician only.**

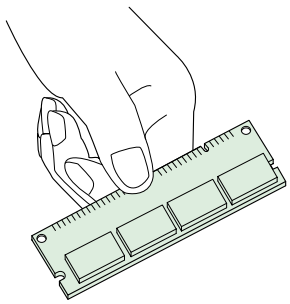
Notes on Handling the Main Circuit Board and DIMM

Protect the electronics by taking these precautions:

- Before touching a DIMM, touch a water pipe or other large metal object to discharge yourself of static electricity. While doing the work, it is recommended that you wear an antistatic wrist strap.
- Touch the main circuit board and DIMM only by the edges.



YES



NO

DIMM to be used

See your Kyocera dealer for purchasing information of the DIMM that are best suited for use with this printer.

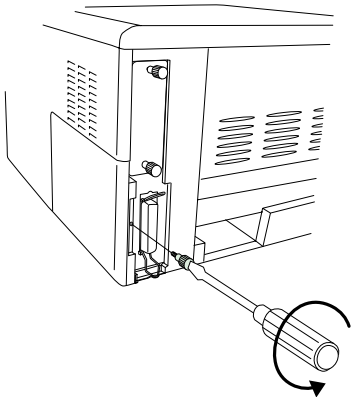
Either an 8 MB, 16 MB, 32 MB, 64 MB, or 128 MB DIMM can be used for memory expansion.

Installing the DIMM

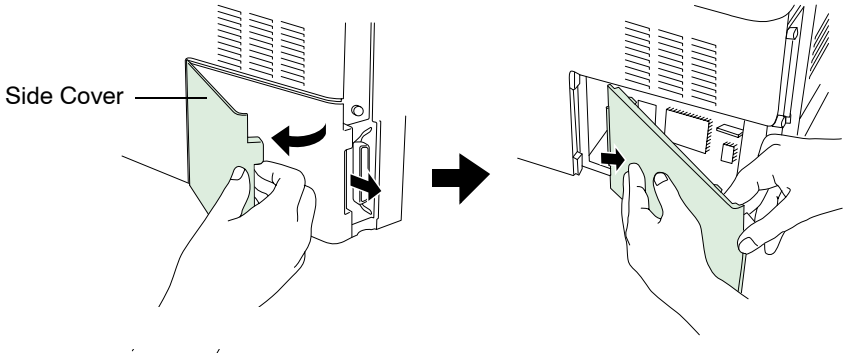
Insert the DIMM into the socket as follows:

1 Turn the printer's power off, then unplug the printer's power cable and disconnect the printer from the host computer.

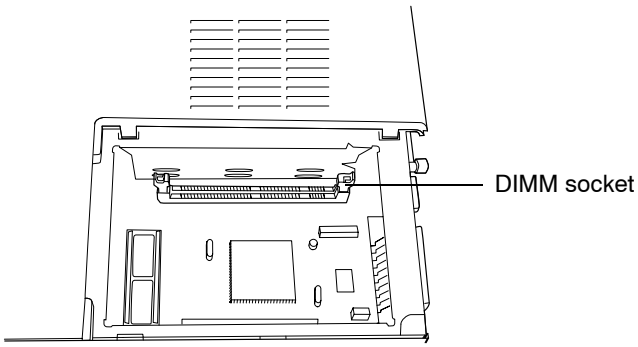
2 Remove the screw from the rear of the printer.



3 Remove the side cover as shown in the figure.

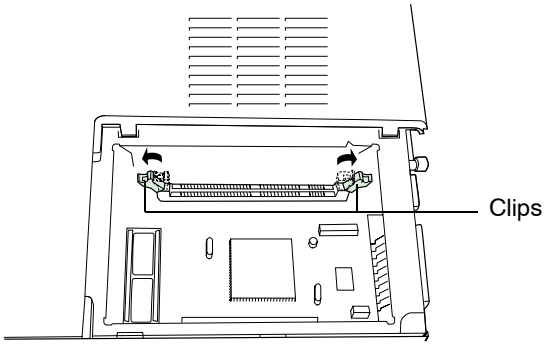


After removing the side cover, you can see the DIMM socket on top of the main circuit board.

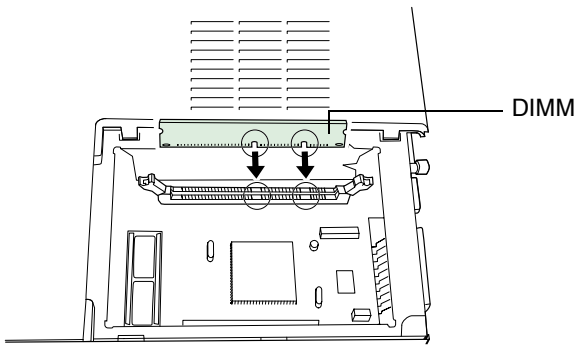


4 Remove the DIMM from its package.

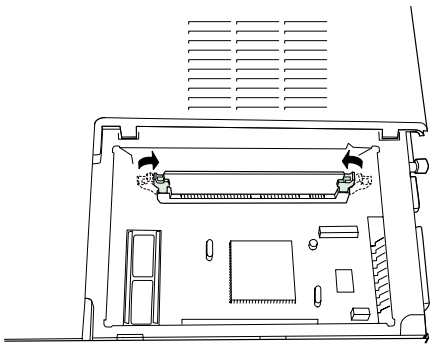
5 Open the clips on both ends of the DIMM socket.



6 Insert the DIMM into the DIMM socket so that the notches on the DIMM align with the corresponding protrusions in the slot.



7 Close the clips on the DIMM slot to secure the DIMM.



8 When you have finished installing the DIMM, replace the side cover and fasten it with the screw.

To remove a DIMM:

Remove the side cover as shown in steps 1 to 3 on page ***B-3***, then carefully pull the end clips outwards and pull the DIMM out of the socket.

Testing the Expansion Memory

After you have finished installing DIMM in the printer, test the printer to see if installation succeeded.

To test the expansion memory, proceed as follows:

1 Make sure the power switch is off. Plug the power cord into the printer and turn on the power.

2 When the printer is online, press and hold the ◎ key 3 seconds or more.

3 If the installation succeeded, the amount of memory shown on the status page will correspond with the amount of expansion memory. (The factory installed memory size is 4 MB.)

Appendix C Host Computer Interface

This appendix describes the signals used in the laser printer's parallel and RS-232C/RS-422A interfaces. It also lists pin assignments, signal functions, timings, connector specifications, and voltage levels. The RS-232C/RS-422A protocols are also covered. Finally, it explains how to use the printer in a multi-computer environment.

This appendix explains the following topics:

- **Parallel Interface**
- **Serial Interface (Option)**
- **RS-232C/RS-422A Protocol**
- **RS-232C Cable Connection**

C.1 Parallel Interface

C.1.1 Parallel Interface Communication Modes

The printer features fast data transmission on the parallel interface. The parallel interface mode can be activated from the **Remote Operation Panel** utility contained on the *Kyocera Digital Library* CD-ROM supplied with the printer as follows:

Note

Use a parallel printer cable that complies with the IEEE1284 standard.

Auto [default]
The printer automatically changes its communication mode to the one the host computer is currently using. Ordinarily, you should leave this setting unchanged.

Nibble (high)
High speed data communication is used in compliance with the IEEE 1284 standard.

Normal
The printer uses the standard communication method prescribed for Centronics interfaces.

High-speed
This mode enables faster data transmission between the printer and the host computer.
(Select this mode if printing problems occur when the printer is connected to a workstation.)

C.1.2 Interface Signals

The pins of the parallel interface connector carry the signals listed in ***Table C. 1***. Asterisks in the table indicate signals that are active low. The table also indicates whether each signal is incoming or outgoing with respect to the printer.

Table C. 1 Parallel Connector Pin Assignment

Pin	In/out	Description
1	In	Strobe* [nStrobe]
2	In	Data 0 [Data 1]
3	In	Data 1 [Data 2]
4	In	Data 2 [Data 3]
5	In	Data 3 [Data 4]
6	In	Data 4 [Data 5]
7	In	Data 5 [Data 6]
8	In	Data 6 [Data 7]
9	In	Data 7 [Data 8]
10	Out	Acknowledge* [nAck]
11	Out	Busy [Busy]
12	Out	Paper Empty [PError]
13	Out	Online (Select) [Select]
14	In	Ignored [nAutoFd]
15	-	Not connected
16	-	0V DC
17	-	Chassis GND
18	-	+5V DC
19	-	Ground return
20	-	Ground return
21	-	Ground return
22	-	Ground return
23	-	Ground return
24	-	Ground return
25	-	Ground return
26	-	Ground return
27	-	Ground return
28	-	Ground return
29	-	Ground return
30	-	Ground return
31	In	Reset [nInit]
32	Out	Error*, returns error status if FRPO O2=2 [nFault]
33	-	-
34	-	Not connected
35	Out	Power Ready
36	In	Select In [nSelectIn]

[ ]: Signal names in the Auto mode and Nibble (high) mode (IEEE 1284). In the Auto mode and Nibble (high) mode, these signals are bi-directional.

Detailed descriptions of the signals follow.

Strobe* [nStrobe] (Pin 1)
A negative-going Strobe* pulse causes the printer to read and latch the data on the Data 0 [1] to Data 7 [8] signal lines.

Data 0 [1] to Data 7 [8] (Pins 2 to 9)
These eight signals form the data byte sent from the host computer to the printer. Data 7 [8] is the most significant bit.

Acknowledge* [nAck] (Pin 10)
This negative-going pulse acknowledges the previous character received by the printer.

Busy [Busy] (Pin 11)
This signal is high when the printer is busy and low when it is able to accept more data.

Paper Empty [PError] (Pin 12)
This signal goes high when the printer runs out of paper.

Online [Select] (Pin 13)
This signal is high when the printer is online and low when the printer is offline. It goes low when the upper unit is raised, or when the ◎ key is pressed to set the printer offline.

Note

The Paper Empty and Online signals are not used unless enabled by the FRPO command (O2 parameter).

+5V DC (pin 18)
This line is connected to the printer's +5V DC line (+5 V ±0.5 V, maximum 400 mA, fused.)

Reset [nInit] (Pin 31)
This signal is used in the standard Centronics interface to enable the computer to reset the printer.

Error* [nFault] (Pin 32)
When the high-speed parallel line control is on (FRPO O2=2), this line returns error status.

Auxiliary output 1 (Pin 33)
This signal line is not used.

Power Ready (Pin 35)

This signal is high when the printer's power is on.

Select In [nSelectIn] (Pin 36)

This signal is used in some versions of the Centronics interface to enable the computer to force the printer online.

C.2 Serial Interface (Option)

Installing the optional serial interface kit (IB-10E) in the printer enables connection to a computer with an RS-232C or RS-422A standard serial interface.

C.2.1 RS-232C Interface

Interface Signals

The pins of the printer's RS-232C interface connector carry the signals listed in *Table C. 2*. The table also indicates whether each signal is incoming or outgoing with respect to the printer.

Table C.2 RS-232C Signal Pin Assignments

Pin	In/out	Signal	Description
1	-	FG	Frame ground
2	Out	TXD	Transmit Data
3	In	RXD	Receive Data
4	Out	RTS	Request To Send
5	In	CTS	Clear To Send
6	In	DSR	Data Set Ready
7	-	SG	Signal Ground
20	Out	DTR	Data Terminal Ready

Brief descriptions of the signals follow.

FG - Frame Ground - (Pin 1)
This pin is connected directly to the printer frame.

TXD - Transmit Data - (Pin 2)
This output carries asynchronous data sent by the printer to the computer. It is used mainly in handshaking protocols.

RXD - Receive Data - (Pin 3)
This input carries serial asynchronous data sent by the computer to the printer.

RTS - Request To Send - (Pin 4)
This output is always held high (above 3 volts).

CTS - Clear To Send - (Pin 5)
DSR - Data Set Ready - (Pin 6)
Unused.

SG - Signal Ground - (Pin 7)
All signals can transmit between the printer and the host computer to send each signal with a signal ground.

DTR - Data Terminal Ready - (Pin 20)
This output is used as a buffer nearly-full handshake line. It is held high (above 3 volts) when the buffer can accept more data.

RS-232C Interface Voltage Levels
The voltage levels of the interface signals conform to EIA RS-232C specifications. SPACE is from 3 volts to 15 volts. MARK is from -3 volts to -15 volts. Voltages between -3 volts and 3 volts are undefined.

C.2.2 RS-422A Interface

The serial interface is set to the RS-232C mode as the factory default. However, by changing the jumper connector on the IB-10E interface board, the interface can be changed to the RS-422A mode.

In the RS-232C mode, the printer can be connected to a personal computer (or similar device) equipped with an RS-232C serial interface. (The serial interface is set to the RS-232C mode as the factory default.)

In the RS-422A mode, the printer can be connected to a personal computer (or similar device) equipped with an RS-422A serial interface.

Note

Changing of the jumper connector should be carried out only by a Kyocera authorized dealer or Kyocera certified technician. Kyocera shall not be liable for damage due to improper changing of the jumper connector.

Interface Signals

The pins in the printer's RS-422A interface connector carry the signals listed in ***Table C. 3***.

Table C.3 RS-422A Signal Pin Assignments

Pin	In/out	Signal	Description
1	-	FG	Frame ground
3	In	RDA	Receive data Inverted
7	-	SG	Signal ground
9	Out	SDA	Send data Inverted
10	Out	SDB	Send data
11	-	-	+5V DC
18	In	RDB	Receive data

Overview of Signals (RS-422A)

FG - Frame Ground - (Pin 1)

This pin is connected directly to the printer frame.

SG - Signal Ground - (Pin 7)

All signals can transmit between the printer and the host computer to send each signal with a signal ground.

RDB - Receive Data - (Pin 18)
RDA - Receive Data Inverted - (Pin 3)

These pins carry asynchronous data sent from the computer to the printer. (differential input)

SDB - Send Data - (Pin 10)
SDA - Send Data Inverted - (Pin 9)

These pins carry asynchronous data sent from the printer to the computer. (differential output)

RS-422A Interface Voltage Levels

The interface signal voltage levels conform with the EIA RS-422A standard. The differential voltage varies from 200 mV to 6 V.

SERIAL Connector

The connector marked "**IOIOI**" (RS-232C/RS-422A) on the rear panel is a DB-25S connector. Use a DB-25P connector (or equivalent) for the connector on the cable.

C.3 RS-232C/RS-422A Protocol

A protocol is a set of rules the computer follows in sending data to the printer. The RS-232C/RS-422A parameters are stored in battery backed-up memory. They are indicated on the status printout. They can be changed by the FRPO (firmware reprogram) command described in the ***Programming Manual*** provided on the CD-ROM supplied with the printer. The parameters and their identification codes are given below.

H1: Baud rate

Parameter value	Baud rate
12	1200
24	2400
48	4800
96	9600
19	19200
38	38400
57	57600
11	115200

The factory setting is 9600 baud.

H2: Data bits

7 or 8, factory-set to 8.

H3: Stop bits

1 or 2, factory-set to 1.

H4: Parity

Parameter value	Meaning
0	None
1	Odd
2	Even
3	Ignore

The factory setting is "None" (0 on the status printout).

H5: Protocol logic

Parameter value	Meaning
0	Combination of 1 and 3 below
1	DTR/DSR, positive logic
2	DTR/DSR, negative logic
3	XON/XOFF
4	ETX/ACK
5	XON/XOFF recognized only as protocol

The factory setting is 0.

H6: Buffer nearly-full threshold

This is a percentage from 0 to 99. The factory setting is 90.

H7: Buffer nearly-empty threshold

This is a percentage from 0 to 99. The factory setting is 70.

The factory settings of the buffer nearly-full and nearly-empty thresholds (H6 and H7) are subject to change without notification.

The gap between the nearly-full and nearly-empty thresholds allows the computer to send a fairly large amount of data in a continuous stream.

H8: Received-data buffer size

This is the size of the input buffer, specified in units of 10 Kbytes. The factory-set value is 6, meaning 60 Kbytes.

Since DTR/DSR protocol is not used with the RS-422A standard, select a parameter value other than 0, 1, or 2 for the H5 setting when using the RS-422A interface.

C.3.1 PRESCRIBE FRPO D0 Command

The PRESCRIBE FRPO D0 command provides control over XON/XOFF operation when an error occurs on the serial interface. The following table summarizes the error status corresponding to different D0 values.

		Serial interface error	
		error not handled	error handled
Timing of XON transfer to host while Ready or Waiting	XON sent every 3-5 seconds	D0=0 (default)	D0=1
	XON not sent	D0=10	D0=11

C.4 RS-232C Cable Connection

C.4.1 Obtain a Suitable RS-232C Cable

Make sure that the RS-232C cable is wired correctly. The cable must be a null modem cable; that is, one in which pin 2 on either end of the cable is connected to pin 3 on the other end. You cannot use a straight cable such as IBM communication adapter cable type 1502067 unless you purchase a null modem adapter.

C.4.2 Connecting the Printer to the Computer

Check that the power of both the printer and the computer is switched off.

1. Discharge yourself of static electricity by touching a metal object such as a doorknob.
2. Remove the plastic cap from the printer's RS-232C interface connector.
3. Plug the printer end of the RS-232C interface cable into the printer's RS-232C connector and screw it in place.
4. Plug the other end of the cable into the computer's RS-232C interface connector.
5. Switch on the printer's power.
6. The printer's RS-232C parameters are factory-set to the following values:

   Baud rate=9600 bps, data bits (character length)=8 bits, stop bits=1, parity=none

   The two RS-232C protocols are XON/XOFF and DTR. The printer performs both of them simultaneously, using positive logic for DTR.

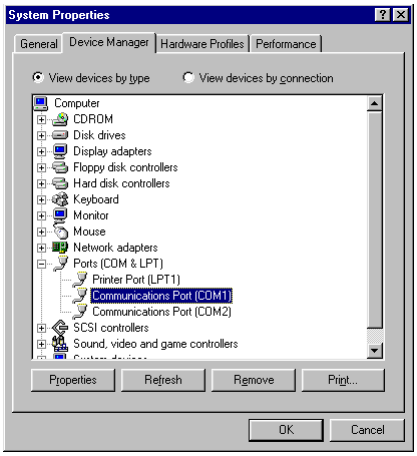
   If you are uncertain as to the printer's current parameter settings, you can reset them to the values listed above by following the procedure described on the last page in this manual.
7. Set the computer to the same parameters as the printer. On many computers this can be done by setting DIP switches before the power is turned on. Another method is as follows:

With Windows 95 or Windows 98, make settings as follows:

1 Click on **Start** button in the Windows 95/98 Task Bar and align the cursor with **Settings**, then click on **Control Panel** from among the items displayed.

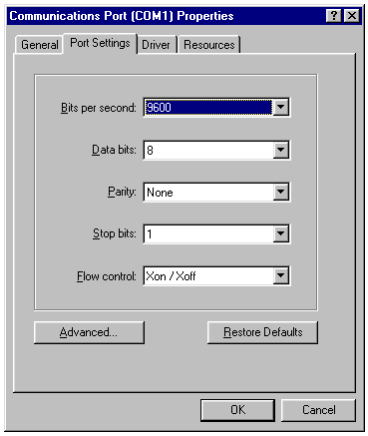
2 The control panel folder opens. Double click on **System**.

3 **System Properties** opens. Click on the **Device Manager** tab, then click on the **COM** port to be used.



4 Click on **Properties** button.

5 The Properties sheet is displayed for the selected **COM** port. Click on the **Port Settings** tab and set the port properties.



6 After setting the properties, click **OK** button.

In DOS, enter the following commands:

```
C:\>MODE COM1:96,N,8,1,P
C:\>MODE LPT1:=COM1
```

To test the interface, enter the following:

```
CTRL P
C:\>DIR
CTRL P
```

The software settings made using the above procedures are temporary. On most computers, permanent settings must be made with DIP switches.

If you want to use a different baud rate or change any of the other RS-232C parameters, you can use the printer's FRPO (firmware reprogram) command. Refer to the ***Programming Manual*** for details.

Appendix D Printer Specifications

Printer Specifications

Item	Description
Printing method	Electrophotography, laser scan
Printing speed	10 copies/minute (A4 or letter-size paper, when printing multiple copies of the same page)
Resolution	600 dpi (vertical and horizontal) with KIR (Kyocera Image Refinement) 300 dpi (vertical and horizontal) with KIR (Kyocera Image Refinement)
First print	Approx. 15 seconds (A4 or letter size), depends on input data
Warm-up time	Approx. 25 seconds (at 23°C, 120 or 220 V)
Controller	PowerPC 75 MHz RISC Processor
Main memory	4 MB, expandable up to 132 MB
Self test	Performed at power-up
Maximum duty cycle	8,000 copies/month
Drum	Organic Photoconductor
Developer	Mono-component dry developer
Main charger	Positive scorotron charger
Transferring	Negative charger roller
Separation	Curvature separation
Drum cleaning	Blade cleaner
Drum discharging	Illumination by eraser LED array
Fuser	Heat roller and pressure roller
Toner saving	Ecoprint mode
Paper	Plain paper (See ***Chapter 5***)
Waste toner capacity	More than 100,000 copies (with 5% print coverage)
Paper feed trays	Cassette: Legal size and A5 to A4/letter universal cassette 148 to 210 mm (5-13/16 to 8-1/2") × 216 to 297 mm (8-1/4 to 11-11/16"). Holds 250 sheets of thickness 0.11 mm MP tray: 80 to 216 mm (3-1/8 to 8-1/2") × 148 to 297 mm (8-1/2 to 11-11/16") (see page ***5-4***). Holds 50 sheets of thickness 0.11 mm
Capacity of output trays	Face-down tray—150 sheets of thickness 0.11 mm Face-up tray—30 sheets of thickness 0.11 mm
Ambient conditions	Temperature: 10 to 32.5°C Humidity: 20 to 80% RH Optimum conditions: 23°C (68°F), 60% RH Altitude: Max. 2000m (6500 feet) Illumination: Max. 1500 lux
Power requirements	120 V, 60 Hz, max. 4.4 A (U.S.A./Canada) 220 to 240 V, 50 Hz/60 Hz, max. 2.2 A (European countries) Max. allowable voltage fluctuation: ±10% Max. allowable frequency fluctuation: ±2%
Power consumption	Max.: 506 W During sleep mode: 6 W

Item	Description
Operating noise (in accordance with ISO 7779 [Bystander Position, sound pressure level at the front])	During printing: LpA=48 dB (A) During standby: LpA=28 dB (A) During sleep mode: Immeasurably low
Dimensions	378 (14-7/8) wide × 222 (8-3/4) high × 375 mm (14-3/4") deep (Excl. the paper tray)
Weight	9.5 kg (20-15/16 lb)

Appendix E Glossary

Cassette mode

This is an operation mode for the MP tray. When this mode is used, approximately 50 sheets of plain paper can be fed continuously, the same as for the cassette.

dpi (dots per inch)

This indicates the number of dots printed per inch, and is the unit of printer resolution.

Ecoprint

This is a printing mode that controls toner consumption. Pages printed in the Ecoprint mode are lighter than pages printed in the normal mode. The default setting is Off.

Emulation

This refers to emulation of manufacturers' printers. The **FS-1000** emulates operation of the following printers: PCL, Line printer, IBM Proprinter, DIABLO 630, EPSON LQ-850, KPDL2 (option).

Expansion memory

This option is used to increase printer memory. The **FS-1000** has one expansion slot, and you can install a 16 MB, 32 MB, 64 MB, or 128 MB DIMM (Dual Inline Memory Module). See your Kyocera dealer to purchase the DIMM that is best suited for use with this printer.

Face-up tray

This is located at the rear of the printer. Select paper output to the face-up tray when printing on postcards, envelopes, or labels.

First mode

This is an operation mode for the MP tray. Because the MP tray default setting is set to first mode (priority printing from the MP tray), if there is paper inserted in the MP tray, the first paper will always feed from there even if another paper source is selected. First mode is specified as the factory default, but you can change this setting from the **Remote Operation Panel**.

IEEE1284

This is a standard used when connecting a printer to a computer, and was established by the Institute of Electrical and Electronic Engineers in 1994.

KIR (Kyocera Image Refinement)

This is Kyocera's original smoothing function. It uses software to enhance the printer's resolution and produce high-quality printing. The default setting is Off.

KPDL2 (Kyocera Printer Description Language 2)

This is Kyocera's version of Adobe PostScript 2. To use this, the **KPDL2 Upgrade Kit** (**PK-6**) must be installed on your printer.

Kyocera Digital Library

This is contained on the CD-ROM supplied with the printer. The contents of the CD-ROM include manuals, printer drivers, and various utilities.

Kyocera PrintMonitor

This is a network management tool that can be used with the Kyocera FS series. You can view information for printers connected to the network using SNMP commands. **Kyocera PrintMonitor** is contained on the *Kyocera Digital Library* CD-ROM supplied with the printer.

MB (mega byte)

This unit is used to express data quantities and memory capacities. 1 MB is equivalent to 1024 kB, or 1,048,576 bytes.

MP tray

This is an abbreviation for Multi-Purpose tray. The MP tray is used instead of the cassette when printing on envelopes, postcards, transparency sheets, and labels.

Offline

The printer can receive data, but cannot print. Turn the printer online if you want to print.

Online

The printer can output received data.

Operator panel

This is located on the top right side of the printer. The panel consists of four indicators and two keys. The four indicators light, flash, and go off in combination to indicate the printer's status. Press the keys when you want to switch the printer between online and offline status, or to cancel printing.

Outline font

With outline fonts, characters outlines are represented by numerical expressions, and fonts can be enlarged, reduced, or painted in different ways by changing the numeric values of those expressions. Printing remains clear even if you enlarge fonts, since the letters are defined by an outline. You can specify font size in steps of 0.25 points up to 999.75 points.

Parallel interface

With this interface, data transfer between the printer and the computer takes place on 8-bit chunks. The **FS-1000** can perform IEEE1284 compatible bi-directional communications.

PRESCRIBE commands

This is the Kyocera page printer control language installed on Kyocera printers. PRESCRIBE commands enable most print settings necessary for pagination, and are easy to understand because they are written in text format, allowing you to do programming yourself. For information on the commands and how to use them, refer to the ***Programming Manual*** contained on the CD-ROM supplied with the printer.

Printer driver

The printer driver makes it possible for you to print data created using application software. The printer driver for the **FS-1000** is contained on the *Kyocera Digital Library* CD-ROM supplied with the printer. Install the printer driver on the computer connected to the printer.

Process unit

This is the printer's main module and contains the photosensitive drum and developer unit.

RAM disk

This is a virtual disk drive that uses part of the printer's memory. With RAM disk you can set any memory size arbitrarily, and use electronic sorting (to reduce print time).

Remote Operation Panel

This is a utility that displays a virtual printer operation panel on your computer screen. You can make various settings from the **Remote Operation Panel**, such as the current paper source and paper size. The **Remote Operation Panel** is contained on the *Kyocera Digital Library* CD-ROM supplied with the printer.

Simple Network Management Protocol (SNMP)

This is a protocol for the management of networks that use TCP/IP (Transmission Control Protocol/Internet Protocol).

Sleep mode

This mode is activated after a specified amount of time elapses. The printer goes into economy mode and a minimum amount of power is consumed. You can change the amount of time before the printer goes into sleep mode from the **Remote Operation Panel**. The default setting is 5 minutes.

Status page

This lists printer conditions, such as the printer's memory, the total number of copies printed, and paper source settings. You can print the status page by pressing the ◎ key for 3 seconds or more.

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